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HYSTERIA OF THE EAR.*

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Systematic writers upon hysteria do not lay much emphasis upon the aural manifestation of that disease and yet some of the most important cases, cases in which a mistaken diagnosis may possibly bring about conditions menacing the very life of the patient—are brought to the aural surgeon for diagnosis and treatment. In most of these cases, of course, the hysterical character of the symptoms is obvious upon even a cursory examination but occasionally a symptom complex is encountered which defies a proper analysis except after long and careful observation and there are not a few cases on record in which serious errors in diagnosis subjected the patient to grave surgical operations with all their attendant dangers.

An examination of the numerous clinical histories which can be found in the literature shows that hysteria can simulate every known organic lesion of the ear with more or less fidelity and has added to the catalogue a long and important series of peculiar aural reflexes in which various parts of the ear play the part of a hysterogenic zone or stigma.

As the pathology of hysteria is unknown it will not profit us to discuss the various theories advanced as they must be left to the neurologist for study and a final determination of their value. What concerns us ultimately, however, is the question of diagnosis. It is on this point that we will be appealed to as consultants and we must be prepared to decide some very difficult problems promptly and with authority. I am not aware that any one has, as yet,

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attempted a systematic classification of these cases. My study of the subject, however, would indicate that there is a natural classification which would assign to each case its place in one of five catagories. This classification is as follows:

1. Cases in which there is no evidence of any disease of the ear.

2. Cases in which a normal or abnormal ear is the seat of hysterogenic zones—as where certain sounds produce reflex phenomena in distant parts of the body.

3. Cases in which there are abnormal appearances in the ear which can be explained, and which the subsequent history of the case demonstrates as, temporary nervous and vascular phenomena (e. g., angio-neurotic oedematous patches, changes in color, etc.)

4. Cases in which there are slight pathological changes in the ear—real, but insufficient or not of a character to account for the symptoms complained of.

5. Cases in which the hysteric inflicts more or less damage upon the ear for the purpose of exciting sympathy or to induce the performance of an operation by the aural surgeon.

Every physician who has served as an interne in a general hospital or who has had experience with general practice knows how necessary it is to take into consideration all the circumstances —both hereditary and environmental—that surround these hysterical cases, and in the course of our inquiry we will see that in some of the cases submitted to us as specialists in which an hysterical tendency is not suspected by the friends or attending physician it will be the opinion delivered by us that aural disease is certainly not present that will first establish the positive diagnosis of hysteria. It is therefore incumbent upon us to be thoroughly familiar with all the signs of this neurosis and to bear the possibility of its presence always in mind, especially when we are confronted with cases in which the symptoms bear an obvious disproportion to the physical signs.

Let us now discuss the various phases of aural hysteria in accordance with our classification:

1. Cases in which there are no evidence of any disease of the ear.

Gilles relates a typical case of this kind. A twenty-one year old hysteric for the two years following upon an emotional disturbance was more or less deaf from time to time. The deafness showed it-

self whenever one spoke to him suddenly. Gilles speaks of it as a paresis of accommolation of the ear. There was no disease of the ear.

Cases of this kind naturally are somewhat rare. In the first place a very large proportion of all the inhabitants of the temperate zone are suffering from chronic catarrhal alterations of the upper air passages and the ears. In the second place practically all hysterics are anaemic and otherwise below normal in resisting power. It follows then that few hysterics will show absolutely normal ears and we can expect to find some slight alterations of a catarrhal character even in cases where we are perfecty satisfied that the aural symptoms are purely hysterical.

2. Cases in which a normal or abnormal ear is the seat of hysterogenetic zones.

These cases are somwhat more frequent than the preceding. They are of several types but probably the most frequent is that connected with sound perception. Steinbrügge has recorded a typical case. An hysterical man of 45 years of age had suffered from peculiar convulsive attacks for 15 years whenever he heard instrumental music. These attacks dated from a severe fright. Other sounds even when they were of great intensity made no particular impression on him. The reflex symptoms included sensations of cold over parts of the body, disturbance of respiration, rotary movements, etc. There was reduced hearing and a chronic discharging otitis media. No hyperaesthesia of the acoustic nerve could be determined.

Voss also records an interesting and instructive case of a character that is much more likely to come under our observation than that of Steinbrügge's. A nineteen year old girl was operaed upon for a chronic purulent otitis and mastoiditis. A cutaneous flap was made from the lower portion of the meatus; the posterior wound sutured and a tampon inserted through the meatus. Change of dressing on the fifth day, removal of sutures, primary healing. There was now a complete hemi-anaesthesia of the body on the operated side, in other words, hysteria. Thereupon the tampon was removed from the ear and not renewed, but merely an outer dressing applied. Prompt receovery.

Voss, in his article on "Diseases of the Ear in Hysterical Subjects," uses this case to illustrate and enforce his contention that packing of the wound cavity after operations for acute or chronic mastoid disease should not be undertaken in nervous or hysterical

adults or children. We have all had painful and disagreeable experiences in years gone by with cases of this character and can remember the terrible scenes accompanying the frequent dressings of these wounds. It is indeed fortunate that for some time past we have recognized the positively harmful effects both upon the repair process in the wound and the nervous system of the patient of the old method of tight tamponade, and that we have adopted improved methods of technique that give to the patient less suffering and to the surgeon more satisfactory results more rapidly attained.

3. Cases in which there are abnormal appearances in the ear which can be explained as, and which the subsequent history of the case demonstrates as, temporary nervous and vascular phenomena.

Numerous observers assert that in the course of hysterical manifestations in which the ear is the seat of an alleged disturbance of function that physical changes do occur, passing away without leaving behind them any trace of their existence as soon as treatment of the hysteria results in a disappearance of the aural symptoms. These are important observations and a knowledge of them will help us to avoid what might have been serious errors in diagnosis. Of course no one could fail to recognize the significance of such a phenomenon as a patch of angio-neuritic oedema, an herpetic vesicle or a psoriatic "drop"—but in some cases the changes are limited to a darkening of the color of the drum membrane—it is described as dark gray—or to more or less circum-membranous or circum-malleal injection. These cases certainly must be difficult of diagnosis. It is even of record that a perfect picture of myringitis has been presented—without, however, any of the subjective symptoms that go to complete the clinical history of that disease. Continued observation, conservative and nice discrimination, and a proper appreciation of the nervous phenomena other than those appertaining to the ear, will be necessary to properly guide us in these cases.

It is possible that some cases of vicarious menstruation, where the blood flow is from the ear, should be placed in this class. Gradenigo describes a case occuring in an hysterical girl of 15 years. Blood came from the ear at the menstrual periods whether the regular menstrual flow from the genitalia appeared or not. Removal of small blood clots from the depths of the external auditory canal revealed "six or eight reddish points of the size of the head of a small pin," which Gradenigo concluded were the mouths

of ceruminous glands. The drum membrane was absolutely intact. In Shambaugh's case, cauterization of the bleeding point caused the aural periodical hemorrhage to cease, but it is not mentioned in the report of this case whether or not there were nervous or hysterical phenomena connected with the ear symptoms or observed in the intermenstrual period.

4. Cases in which there are slight pathological changes in the ear—real, but insufficient or not of a character to account for the symptoms complained of.

This class includes by far the largest number of cases. As already stated the hysteric is almost invariably below par not only as regards the inhibitory mechanism of her will power, but also as regards the resisting power of her tissues to the ordinary wear and tear of physical existence. Therefore, we find in a very large proportion of all cases certain more or less marked, or more or less serious, lesions of the ear. Diagnosis, of course, is a fairly easy matter in those cases in which the allegations of subjective symptoms by the patient are out of all proportion to the actual findings in the aural system by modern methods of diagnosis—but a certain number of cases present themselves in which the difficulties of diagnosis are very great. I have seen a case, for instance, in which the cerebral symptoms of a fully developed otitic meningitis, in a hysterical girl of 12 years, closely simulated and were regarded as a purely hysterical mental exhibition until within a few hours of death. Even the temperature range is not an absolutely trustworthy measure of diagnosis between the two conditions—especially as the hysteric is so frequently subject to digestive disturbances with intestinal putrefaction and various signs of an auto-intoxication of which an elevated temperature is not the least frequent. The differential blood count is probably our most certain reliance when the suspected hysterical manifestation simulates an inflammatory otitic condition and it is quite possible that this might have to be repeated a number of times.

We must never forget that many of these patients are quick witted, wonderfully determined to deceive and some of them more than willing to undergo serious operations—if thereby they can secure the attention of doctors and the solicitude of nurses and the anxious sympathy of their friends. From the questions of one physician they learn or infer what symptoms or signs are sought for in the disease that they desire to exploit so that by the time they are consulting their third or fourth medical adviser they are fairly well

up in their part and often act it so admirably as to be able to deceive, at least for a time, men of skill and experience.

Voss mentions an hysterical woman who succeeded in having her mastoid opened by feigning a mastoiditis, and then details a case of his own. A woman, 45 years of age, presented herself with the drum bright red and swollen as in acute otitis media just before perforation. There was severe otalgia. He treated her palliatively as a case of acute otitis media for three days and as the condition did not improve performed paracentesis. The tympanic cavity contained nothing but air. In 24 hours the incision closed—no secretion appeared on the occluding gauze but the conditions were the same as before. Voss now made a diagnosis of a neurotic and not an inflammatory condition and prescribed bromides and valerian. In 24 hours the membrane appeared normal and the pain was gone.

It is in this class that we must put most of the cases of hysterical otalgia or hysterical hyperaesthesia of the acoustic nerve. A physical examination of the ear reveals possibly only some slight catarrhal changes—or it will reveal areas of hyperaesthesia or analgesia of the skin in the canal, over the auricle and even down the neck to the clavicular region, the shoulder and the chest wall. These anaesthetic or hyperaesthetic areas should always be diligently sought for as sometimes they are the only hysterical manifestations upon which a diagnosis can be made.

Finally we have 5—Those cases in which the hysteric inflicts more or less damage upon the ear for the purpose of exciting sympathy or to induce the performance of an operation by the aural surgeon.

It is probably the existence of these anaesthetic areas which permit and induce the hysteric to sometimes inflict upon herself visible injury. Sometimes the injury is practically nil as in those cases where some filthy substance is introduced into the external auditory canal—but, if we were permitted to judge from the standpoint of a normal person, the discomfort would be extreme—even unbearable.

More often, however, there is slight but actual physical damage done. I had a case under my care a few years ago. A young girl about 19 years of age, tall, slender and highly neurotic was brought by her parents on account of neuralgic pains about her eyes and nose. There was a slight posterior hypertrophy of both inferior turbinals and a half dioptric of astigmatism, under homatropin, which was rejected later. When it was evident to her

that she was about to be dismissed from further treatment she was brought in great alarm by her parents one morning—her right ear plugged with cotton—with the assertion that the ear had been bleeding copiously during the night as was evidenced by the blood stained condition of her pillow. The cotton taken from her ear was stained with blood, it is true, but an examination of the ear revealed that the latter was normal in all respects. There was not even a slight abrasion. Instituting a search for the source of the blood stains on the pillow and the cotton with which she had deceived her parents, I found several recent abrasions covered with moist blood clot on the right side of the nasal septum. I informed the parents of the conditions and, of course, was met with indigant protests—but the evidence was complete and unimpeachable.

Very recently I have had under my care a somewhat similar case. A woman, aged 28 years, was brought to me by Dr. Duncan, of Burlington, Ky., who was quite convinced that it was a case of hysteria, but wished to have his opinion fortified by an expert examination of the ears, nose and throat. She gave a history of having fallen from a horse seven years before, striking on the right side of the head. She was unconscious for twenty-four hours. Two years ago she had headaches and a pain in the right ear followed by a discharge of pus. With the pus were also discharged at various times pieces of bone which aggregated in all about a teaspoonful. Other pieces of bone were discharged from the ear into the pharynx and were coughed out and a couple of pieces were also passed out through the right nostril. This astonishing statement was corroborated by her husband who stated, as conclusive evidence, that *he had seen the bones.* Since then the ear had not given her any trouble until two weeks ago when there was sudden and severe earache followed by a displacement of the lower jaw to the left and tenderness and retraction of the neck muscles on the right side. All movements of the head were painful, and on account of the displacement of the jaw, the mouth could not be closed and saliva was constantly drooling. The patient entered my consulting room the very picture of abject misery—pale, haggard, stooped—the head retracted to the right, barely able to walk across the floor and almost unable to talk. I was almost willing to believe her statement that she had tasted neither food nor drink for two weeks. The physical examination revealed an exquisite tenderness over the right mastoid but otherwise

a perfectly normal ear. I agreed perfectly with Dr. Duncan in the diagnosis of hysteria and determined to try the power of suggestion. I assured her positively that she would speedily recover from her distressing symptoms, admitted her to a room in my hospital and sent her husband home. After admission to the hospital she refused to take her internal medicine (Elix. Sod. Brom.), alleging her inability to swallow—although later she was found to have drunk water out of a glass accessible to her. After she had fallen asleep, quite firm pressure made over the sensitive mastoid elicited no response. On the second day the nurse reported that the right ear was discharging freely—an examination, however, revealed another trick. She had endeavored to fill the external auditory canal with a thick muco-purulent secretion which she had probably coughed up and introduced with her fingers,—the inner half of the canal and membrana tympani were found dry and normal. Up to this time there was total deafness of the right ear both for voice and tuning work. The treatment consisted of a mild current of electricity to the ear, leeches over the mastoid and suggestion. At the end of five days all of her severe and disagreeable symptoms had disappeared, her hearing was completely restored and she returned home cured and wonderfully improved in appearance.

I have been surprised in my study of the literature to find so few cases of this character. Cases of simulated or of functional deafness, of reflex neurosis and curious aberrations of hearing, are abundant but cases in which a deliberate attempt was made by mechanical means to induce the patient's family and friends to believe that a serious disturbance of the ear was present are very few.

One of these cases from the literature, I will recite to you, in the first place because it is really a typical case of this character and in the second place on account of its quaint phraseology and its shrewd analysis of the phenomena presented. It is found in a curious old volume published in Breslau, in 1726, under the title of "Sammlung von Natur und Medicin wie auch hierzu Gehörigen Kunst und Literatur Geschichten. Frühlings Quartel." This old book is written in a curious mixture of German and Latin and printed in a still more curious mixture of black letter and Roman type. The following is a translation of the author's account of the case: "Another case is reported by Dr. Joh. Pet. Wahrendorff of Liebnitz: a girl of 20 of phlegmatic temperament who passed peb-

bles through the ears, nose, mouth and uterus; and finally, sand through the bladder" (he describes the sand as like that used by the German servants for scouring floors). "The pebbles resembled so closely those found in the creeks and fields and were so unlike anything found in the human body that he thought it must be a case of fraud. On visiting said patient a small pebble protruded from the left ear and the patient was sneezing violently. The parents, who were honest and pious people, assured him that these paroxysms of sneezing continued until the offending pebbles were forced either from the nose or ears. If the pebbles occurred in the mouth there was violent coughing and finally coughing with ejection of the pebble. If the pebble was to be passed per uterus or vaginam the patient complained of pain and pressure in the abdomen. Menstruation regular every fourth week. The color and size of the pebbles differ, some are black and others white, large and small, depending on the part of the body from which they come. The parents had collected quite a large number of these pebbles, but they did not collect or save the sand. The suggestion of witchery had been made but as the parents, who are very pious people, had assured the doctor that there was no deception and no witchcraft and as the pebbles so closely resembled those found in the fields and creeks, the doctor was very much puzzled. In addition to the sand the patient's urine had at various times assumed different colors, red and bloody, then black as ink and finally green. Two of the pebbles from the ear weighed five grams each, one was white, the other black. One from the mouth which was black weighed nineteen grams. One from the anus, white in color, weighed one drachm two scruples; another, one drachm; this one was also white. One from the vagina, ten grams. After a careful examination of the pebbles the following conclusions were reached:

1. That they were ordinary and real pebbles.

2. That they could not have been generated in the human body but certainly must have gained entrance from without.

3. That the same must necessarily have entered the body in their present shape and size, through the act of deglutition just as they leave the body through the excretions; and this being so the patient must know for a certainty when and how these pebbles reached her abdomen.

4. * * * *

5. Had they been carried from the stomach through the blood into the emunctories, this could not have occurred in the ears, nose, vulva and urethra without laceration of the meatus and without hemorrhage.

6. If they had been placed into each "emuctorium externe" this is not so strange, because it would be easier to do by the human hand, than for a supernatural power to do so.

7. It is to be remarked that the power (which did it) acted in a sensible human way for those in the nose and ears were small; those in the anus and vulva large; and none at all in the eyes; and if the devil had done this and had acted in a supernatural way, he would not have followed this order and would certainly have lacerated the external meatuses. The author finally concludes that the girl did this herself—despite the parents' statement to the contrary. Later he concludes that if the girl had been bad enough to do this she undoubtedly colored her urine by drinking various colored inks of her father's, he being a teacher and requiring inks of different colors."

The diagnosis of these cases often presents unusual difficulties and I have been taught that it is unwise to make a hasty diagnosis of hysteria in those cases, occurring as they so frequently do in neurotic subjects, where the initial examination reveals no adequate cause for, say, a persistent and earnest allegation of pain in and about the ear. We are arriving now at a wider and more accurate knowledge of the pathology of the nose and its accessory cavities and we know that it is quite possible for a diseased ethmoid cell, or sphenoid cell, or for an hypertrophied middle turbinate, to produce reflex disturbances in the ear so out of all proportion to the apparent local disturbance that the real cause of the ear trouble can be overlooked even by careful observers, for a long time. I recall one case occurring in a young girl who alleged pain and paraesthesia in the ear and who was examined by me repeatedly with a negative result. She was of a neurotic temperament and passed through the hands of one neurologist after another. She had an ocular muscular disturbance which was corrected by tenotomies and glasses. Hereditary syphilis was suspected in her case and she was energetically treated. Finally it became slowly and increasingly evident that she was suffering from an ethmoiditis and the inflammation of the accessory cavity with its extension to neighboring structures gradually unfolded

itself as the cause of the aural disturbance which was advancing into a confirmed chronic catarrhal deafness. And yet the original diagnosis of hysteria seemed to be justified up to the time of the discovery of the infected ethmoid cell. In another case, that of a middle aged lawyer, persistent pain in the mastoid without any visible lesion was diagnosed originally as hysterical mainly on account of the neurotic temperament of the overworked and worried patient. Long continued observation of the case finally convinced me that there must be a real underlying pathological cause. I opened the mastoid and found an extensive osteo-sclerosis. The otalgia was banished by the operation and has not returned since.

We see, therefore, that in some cases, indeed in many cases where the diagnosis of hysteria would seem to be natural and inevitable almost at once, it is incumbent upon us to search diligently, conscientiously and repeatedly for any condition either of the ear itself, the nose, the throat or the accessory cavities, that might be able to account for the symptoms complained of, not only for the sake of properly understanding the patient's condition and benefitting the patient, but for the sake of our own reputation.

The management of these cases, whether they be cases of pure hysteria or real aural disease with an element of hysteria is always a delicate matter. Should we make a diagnosis of hysteria in a patient with a normal ear or an ear with but very slight pathological changes I hold that it is our duty to turn the patient over at once to a neurologist, acquainting him with all the facts in our possession—the case is one for a nerve specialist for the patient has no aural disease. In those cases in which there is more or less disease of the ear it becomes a matter of nice discrimination as to how it should be dealt with. Where the hysteria is severe and the aural disease slight I would prefer again to turn the case over to a neurologist and undertake only such treatment of the ear at such times and under such circumstances as in his judgment was best, for we must never forget that continued treatment of the ear will tend to confirm such illusions as the patient may have concerning its condition.

Where, however, the condition of the ear is one calling for immediate attention we must give it that attention—probably in such a case operative, or at least mechanical—bearing in mind the hysterical state of the patient, always speaking cheerfully and, possibly, stretching the facts a little to furnish a favorable prognosis for the disturbed mind. In all events it is imperatively necessary

for us where extensive operative wounds have been inflicted as in an operation for mastoiditis to reduce the discomforts of the period of repair to the minimum and to hasten the process of repair to the utmost. Fortunately modern methods of dressing and handling these cases permit us to do this. All painful packing can be omitted and by proper grafting the area of raw surface is very materially reduced. But throughout all of these procedures we should always bear in mind that in reality we are but doing emergency work on some one else's patient—and this hysterical patient, who has illusions concerning the ear which are beyond the realities which we have recognized, operated upon and healed, should be put in the care of the neurologist at the earliest moment at which we can conscientiously discharge her.

It is certainly unnecessary before a body like this to argue against the propriety of undertaking or pretending to undertake an operation on the ears of these patients for the purpose of attempting to "satisfy their minds." One might characterize this as trivial folly were it not possibly fraught with grave and even serious consequences. I would not mention it were it not that one occasionally sees in the surgical press reference to cases of such unjustifiable childishness. Such a procedure even if alleged to be successful, does not assist in restoring the will power, the mental resistance of the unfortunate patient—on the contrary, it but confirms her in her belief in the reality of the hysterical symptoms under consideration and paves the way for fresh illusions as to the same or other parts of her body for the relief of which she will demand other similarly successful operations. I only mention the matter, gentlemen, for the purpose of expressing an unqualified condemnation.

In every volume of the special journals devoted to the diseases of the ear one can find records of cases of aural hysteria. I have therefore confined my bibliography to a few special cases selected from these journals and to the important and interesting cases that I have found in the leading general journals or in monographs.

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TOOTH CYSTS.*

BY THOS. J. GALLAHER, A.M., M.D., DENVER.

It is not our purpose to transgress upon the domain of the dentist, but rather to report a few cases of interest to the rhinologist.

Tooth cysts may be divided into periosteal and follicular cysts. Periosteal cysts have their origin in the covering of the root, and consist of granulation and epithelial cells. They appear to be more frequent in the upper jaw than the lower, although they are many times overlooked in the lower jaw, owing to the thickness of the bony cortex limiting their growth.

It has been my experience that the lateral incisor and bicuspid are especially affected. The sack gradually increases in size, encroaching upon the surrounding parts, and many times, owing to the bony covering being absorbed, extends into the antrum and nose. It contains a straw-colored fluid, often rich in cholesterin crystals. Not infrequently the contents are infected and a pus sack results.

The treatment of the periosteal cyst is simple and efficient. Incision is made into the cyst wall, thoroughly draining it. If necessary, a counter-opening is made and very mild packing is used for several days, after which time washing of the cyst with antiseptic solutions is all that is required. A cure is usually obtained in from three to six weeks.

The Follicular cysts originate in normal or supernumerary retained tooth germs. They are much slower in growth and not at all dependent upon pathological changes in the tooth itself. The diagnosis is sometimes difficult, but with a swelling in either jaw, together with the absence of the permanent tooth, a Dentigerous cyst should be suspected. The use of the x-ray photograph is especially useful for diagnostic purposes.

The Follicular cysts are the true Dentigerous cysts — that is, tooth-bearing cysts. A root is never developed from these germs, but a tooth crown is often found in the sack.

Treatment of Follicular Cysts.—An incision is made through the mucous membrane and periosteum and a large flap is dissected

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loose. After chiseling away the bony cortex, the inner cystic wall should be most thoroughly dissected out and the mucous membrane of the periosteum crowded into the cavity by a compress. If the sack is not thoroughly removed, there may be a recurrence. Not the least of the dangers of a dentigerous cyst is the possible occurrence of a rarifying osteitis which may destroy the entire jaw.

Case I.—Miss R., age 25, presents herself with marked facial deformity. There is a swelling underneath the upper lip, on each side of the median line, so prominent that the nose is displaced forward. Upon examination, a cyst on each side is easily detected, at the junction of the alveolar and buccal mucous membrane. Examining the nose internally, a cyst is seen along its floor and underneath the anterior portion of the inferior turbinate body. This is a very plain case of double Periosteal cyst connected with the right and left incisor. This is the first case of double Periosteal cyst that I have ever seen. Two incisions were made into the sack, one in the nose and one in the mouth, giving good drainage. This was followed by gentle packing, stimulation with a mild solution of iodin and washing. Both cysts were cured within five weeks. After the operation the cosmetic effect was very striking.

Case II. Mrs. R., age 35, presents herself with a swelling at the right of the median line, causing a displacement of the wing of the nose. It has been coming on for some months and has been painful during the last week. Intranasal examination shows a swelling on the floor of the nose extending to the outer wall. By direct palpation in the nose and under the lip, a cyst is diagnosed. An incision under the lip liberated pus. Another incision was also made on the floor of the nose. The usual treatment was followed out, resulting in a prompt cure.

Case III. Exactly like *Case I,* occurring in a woman, age 40. The sac contained pus and was unilateral.

The above are all illustrations of the ordinary Periosteal cysts.

In conclusion, I wish to report two cases of Follicular or Dentigerous cysts.

Case I. Boy, age 11, presents himself with a swelling in the upper left maxilla which is firm and painful. Immediately above the sixth-year molar a Dentigerous cyst was suspected, and we operated upon him a few days afterward. With a good labial retractor, the parts were well exposed and incision made from the

canine fossa posteriorly to the malar ridge. The membrane and the periosteum were carefully dissected loose, followed by two incisions at right angles to the original one, and the bony cortex removed. The cyst was then dissected out as thoroughly as possible, followed by curettage. The membrane, with its periosteum, was then pushed back into the cavity and held in position by means of tampon. Suppuration followed, but after eight weeks of careful washing and stimulation the entire cavity closed. In this cyst an inverted tooth crown was found, probably a supernumerary bicuspid.

Case II. Young woman, age 22. A diffuse hard swelling is found over the second bicuspid. She reports that she was operated upon previously and the bone scraped. There is a large fistula opening into the antrum. This fistula has discharged for over a year. There has been no discharge of pus from the nose. An incision was made from the median line to the malar ridge. The membrane was then carefully dissected up. In this case it became necessary to remove the entire anterior wall of the antrum. The cyst wall was removed and the extensive removal of bone was made necessary by the existing osteitis. The walls of the antrum were also curetted. The subsequent treatment consisted in the packing and washing of the antrum. A drainage tube was soon introduced and the washing continued through it. Healing was complete in about seven weeks.

No doubt every rhinologist sees many of these cases, but as all of these had been overlooked, I hope that the recital of my experience will be of some interest to you.

605 California Bldg.

ON THE OBLITERATION OF THE ACCESSORY NASAL SINUSES.*

BY A. R. SOLENBERGER, COLORADO SPRINGS.

I shall give a somewhat full report of this case, in order to set forth some points in the technique which have brought success in my hands. I wish the case also to serve as a type of conditions which clearly demand radical measures.

Judge B., age fifty-three, native of Ohio, asthma and bronchitis for seven years, consulted Dr. B. of New York during the fourth year of his disease; diagnosed bilateral ethmoiditis and nasal polypi. The latter were removed by the radical method of ethmoidal exenteration in the old way, by breaking down a few ethmoidal cells with the electro-motor but at intervals of several months,—a method originated by Dr. B. Thus at the end of six months the nasal polypi, together with their bases, were pronounced radically removed.

The patient returned to his home, to find a month later that instead of a diminution of nasal exudate, it had greatly increased.

Dr. H. of Buffalo was now consulted, who diagnosed *bilateral antral disease*. Both antra were now operated upon, through the canine fossae, curetted and treated by packing and irrigation, and the openings allowed to heal at the end of six weeks.

After the interval of some months the nasal discharge had in no way lessened, but rather *increased*, as well as the asthma and bronchitis. Moreover, there appeared a swelling over the *frontal sinuses*. Dr. H. curetted both frontal cavities through a single medial opening, and enlarged the naso-frontal ducts. The openings closed with great difficulty; indeed, in the patient's words, "I had *three* operations on the frontals under general anaesthesia, in *three months*."

There being still no cessation of the nasal discharge, the sphenoid cavities were investigated and found to discharge copious quantities of pus. These cavities were in turn operated upon, by enlargement of their openings and curettment.

The one feature of all these operative measures which seemed of especial significance to the *patient* was the secondary hemorrhage after the sphenoid work.

* Read before the Western Section of the American Laryngological, Rhinological and Otological Society, Denver, Colo., February 16, 1907.

I saw the patient first a little over a year after this last operation. He had sought relief from his affliction in New Mexico and Colorado, hoping now that since all his nasal cavities had been scraped out, the climates, which had helped him before the operation, would now be even more beneficial. He thought his asthma and bronchitis were worse than ever. The quantity of pus from his head alone was over a pint daily. He now had for the first time since the operations again a painful swelling over the frontal sinuses. Meanwhile, too, the patient had been a diligent student of his own condition. He had heard that in Germany they were obliterating the nasal accessory cavities, and that Doctor C. in New York was then doing that operation on a relative of his. He wanted this done on all his cavities. He believed the Colorado climate would contribute to the success of the work. He would give all the time, and everything else that was necessary. He thought his physical condition equal to the radical work.

Of the six cavities, the frontals alone offered slight obstacles to canulization, due to the acute swelling. The patient was very desirous of being relieved of the painful acute frontal condition, to enable him to return east for a month to attend to a business matter involving a vast sum of money. This relief was speedily secured by enlarging the naso-frontal ducts from the inside, and irrigating the cavities. The irrigation was continued by the patient, and he was able to transact his business with a fair degree of comfort, and return to Colorado at the end of two months.

My study of the entire disease circle of this case during the time of treatment of the acute condition of the frontals convinced me that here was a case in which total cavity obliteration was in order.

The Frontal Sinuses. Finding the patient as enthusiastic as ever, we proceeded, under general anaesthesia, as follows: Incision through the median line of the brow, through its entire length, curving well down over the nasal process of the superior maxillary bone, and the removal of the entire anterior wall of the sinus. Every vestige of the overhanding wall was removed, so that the dips on all sides, if not slanting, were at least fairly vertical outward. The contours of both cavities were normal, that is, symmetrical in size, location and outline. Both were lined with pyogenic membrane, rather loosely adherent, the entire cavity filled with suppurating granular tissue, easily spooned out *en masse*. The entire remnant walls were most thoroughly scraped, and irregularities leveled down as much as possible; most searching removal with curved currettes and

burs of all necrotic tissue in the naso-frontal ducts, together with the destruction of one (remnant) ethmoidal cell, near the upper end of the duct. The cavities were then swabbed with carbolic acid and alcohol and packed down to, but not into, the nasal duct. No sutures were taken.

The first two weeks the repackings were done with very little pain, by local anaesthesia. At the end of that time there occurred the expected inveterate inversion of skin edges, in spite of vigorous under-packing—the beginnings of the dreaded deformities. The patient was anaesthetized and a thorough loosening and uplifting of the periosteum around the whole skin circle made a complete underpacking again possible. Meantime the cavities had half filled with a firm, healthy granulating tissue; the naso-frontal ducts were apparently filling in satisfactorily. After this, each week or ten days it became necessary to loosen again and lift up the skin edges, as they tended here and there to invert and prevent underpacking; this was now done under local anaesthesia, sometimes with the needle.

Thus by this periodical loosening and raising and underpacking of the inverting skin flaps, the naso-frontal ducts and the cavities filled up with good tissue, and the edges could be brought together with sutures at the end of the seventh week, and healing by first intention was complete by the eighth week. The flaps were fortunately so managed that when the hair appeared the two brows were on the same level. The only deformity noticeable was the slight depression above and between the nasal bones, occasioned by the previous operations. It is of interest here to note that, from the day of the operation on the frontal cavities, the patient had no more attacks of asthma.

The Sphenoid Cavities. The Sphenoid Cavities were operated on under local anaesthesia, in the sitting position. Cocaine and adrenalin were injected freely into the soft tissue around the enlarged openings, and afterwards powdered cocaine freely applied progressively. Although the openings were enlarged by previous operations, the cavities dipped down nearly two centimeters, which was about the depth of the remnant of the anterior walls. They were too hard and thick to be broken down by any hook or forceps in my possession. The only means at hand seemed to be the electro-motor bur. On the right side I began the work with some trepidation. This was the side where the secondary hemorrhage had occurred after the previous operation. I had meantime secured a reprint of the report which the former operator had given of this case. The hemorrhage had been alarming; the patient had had to suffer a retro-

nasal packing for eight days, and was for a time in a state of collapse from exsanguination.

The operator advanced the opinion that in carrying his excavation toward the right he had exposed the speno-palatine artery, a twig of the internal maxillary.

I, therefore, studiously tried to avoid drilling in that direction. I found that by removing a part of the partition between the two cavities; I could drill the anterior wall down to the floor of the cavity, and get a width of more than a quarter of an inch, through which I could make a very thorough curettment. I feared that by leaving a small part of the outer part of the anterior wall projecting, it would militate against obliteration; but in three weeks the cavity was fairly well filled with tissue, which in a few weeks more became quite firm. The other sinus was then proceeded with in the same manner. The first was filled out at the end of five weeks; the second, being somewhat smaller, filled out in four weeks. There was at no time any hemorrhage of any consequence. The patient had no asthma and only slight bronchitis during the three months of this operative work, and was otherwise in good physical condition.

The Maxillary Antrum. The Maxillary Antra were then opened, through the canine fossae, under general anaesthesia. The antra were found of such size that in order to secure working space to remove the entire anterior walls, especially to get a straight wall outward on the nasal side, the incisions underneath the lip had to be extended upward and inward close to the cartilaginous and osseous border of the nose; and, of course, outward well over the malar process of the maxilla.

Both cavities contained pyogenic membrane of various thickness, and granular tissue, especially on the floors and on the anterior walls apparently at the seat of former operations, and on the nasal wall, beginning at the hiatus, running downward to the floor and forward into the extreme anterior corner, large masses of tough pocketed tissue, all pus producing, was brought into view only after the removal of the extreme upper angle of the outer wall. I was satisfied that this mass had not been removed in the former operation. This mass, as well as the pyogenic tissue around the hiatus, were too firm for the curette. It had to be removed with scissors and punch forceps.

The size of the antra, especially their antero-posterior diameter, being nearly two inches, made it seem a formidable proposition for obliteration, but a fairly good, funnel-shaped outward opening was secured, and a thorough curettment of the nasal openings to en-

courage their closure being made, the after treatment, aiming at a filling up of the cavity from the hiatus downward, was begun; i.e., by packing during the first week, loosely and at times afterward, firmly, to press downward too exuberant granular tissue, for three weeks; after which for a day or two, only now and then the packing was used. No irrigation was used, and the greatest care was taken in the dry cleansing and packing not to destroy the abundant delicate granulations. After the fourth week the dry cleansings were done only on alternate days.

As in the case of the frontal sinuses, the soft tissues around the openings had to be kept back by almost weekly incisions, and lifting of the periosteum (which, however, could always be comfortably done under local anaesthesia).

The opening into the nose in the one cavity closed pretty promptly, and this cavity filled out with much less attention than the other, whose hiatus did not obliterate but formed the inner end of a fistula, closing only in four months after numerous curettings of pus-producing tissue.

It should be said that during the entire time of this obliteration work, the nasal passages, whose linings, as might be supposed, were also at least in a semi-pyogenic state, were constantly under treatment. The winter following this work, the patient for the first time in seven years could remain at his eastern home. No asthma, very little bronchitis, and when last heard from, April 1st, 1906, two years after the last operative work, there was a very small quantity of non-purulent discharge from his nasal passages.

From my experience in obliteration work, I would advance a few considerations in reference to the indications for this radical work, and some points in the technique which I think are essentials to success.

First: In the case of any or all the cavities, the degree of chronicity should be determined as a guide in the choice of methods.

Second: The intra-nasal disease, which is practically always present, should be as nearly as possible eradicated. This in most cases being not possible, the treatment of the nasal passages should go on *pari passu* with the operative work, to guard against re-infection of the operative field.

Third: In all the cavities, too, the entire walls should be removed: no overhanging bones should be allowed; a funnel-shaped outward opening should be aimed at. Curettments should be religiously thorough; bare bone, even though not rough, should be vigorously scraped.

In the case of the frontal cavities, all the necrotic tissue should be scraped or burred out of the naso-frontal ducts, and in any event that canal should be so enlarged that any ethmoidal cells lying along its side, or at the bottom, can be entirely obliterated. The packing should not enter into the duct. This cell obliteration, in several of my cases, left a duct large enough to admit the passage of the little finger into the nose and no trouble was experienced in the subsequent closure of the duct.

The form and location of the frontal cavities also should be taken into account when obliteration is thought of. This, indeed, I think should be the first consideration in the choice of any method of operation for the frontal cavities. Fortunately skiagraphy, in many cases, will show us the height and breadth of cavities, complete and incomplete septa, etc.

At most, only one suture should be taken at the outer angle, and one at the inner angle only when the incision has been carried far forward unto the nose.

I here show a device which is of considerable help in guarding against the inversion of the skin edges. This bridge is well retained and packing through its opening relieves much of the discomfort to the patient. It is made of malleable block tin.

Irrigation should be avoided as much as possible. The dry cleansings with swabs, at most only moist with peroxide if there is purulent matter, should be gently done, that the abundant delicate granulations be not bruised; but even more than in ordinary granulating wounds, one must know when to pack lightly or firmly or not at all, in order to secure the most rapid growth of tissue with plenty of the fibroid element.

Maxillary Sinuses: The Maxillary cavities offer special difficulties in their obliteration, mainly because of the distance of the

nasal openings to the outer edges of the wound, and of the greater tendency to proliferation of the soft tissues around the external opening. Nature seems here to be especially rebellious against the obliterative aims of the surgeon.

The first condition for success here is the early closure of the hiatus semilunaris. To effect a closure of this opening is to work squarely against every law of nature which intends that this cavity should breathe through the nose and drain through the nose. Of course the same can be said of other sinuses, but when an attempt is made to heal the antrum through the canine fossae, a vast difference is experienced.

Other operators, too, have met with but indifferent success in obliterating these cavities. Among them Coakley, who has had perhaps the largest experience in this country, reports cases which still had fistulae a year after the operation.

For this reason I think obliteration of the maxillary cavities will in the future be more and more done by making vents and draining through nature's avenues; that is, by the Campbell-Luc method —the removal of the nasal wall and the encouragement of the filling up process. Indeed, by this method I have myself seen these cavities fill up with firm fibroid tissue, so that there was left only a shallow sulcus in the nasal fossae, and secretions that gathered there could be dislodged by ordinary blowing of the nose.

INDICATIONS FOR OBLITERATION OF THE SINUSES.

To in any way exhaustively study the indications for sinus obliteration, though perhaps the most profitble study of all, would not be possible at this time. I would therefore consider the indications only in a general way.

First, in regard to all the cavities. As in all surgical work in which the method aims at the obliteration of a *structure*, not to say an *organ*, the *more radical* such *procedure* the *finer* should be the *discrimination* and the more deliberate the *judgment* in regard to the *indication*.

In general it may be said that the method is justified only in the highly chronic conditions, in multiple sinusitis; especially such as have had prevous unsuccessful operations.

Second, in the case of the frontal cavities, the form and location should be taken into account when obliteration is thought of. This, indeed, should be the first consideration in the choice of any method of operation upon the frontal cavities. Fortunately skiagraphy, in many cases, will show us the height and breadth of the cavities,

complete and incomplete septa. It will show certain forms of cavities that by *any method* which aims at *obliteration,* will cause such a deformity that may be considered by the *patient* a very extreme price to pay for his relief.

Third. Though we should be very tardy in discrediting a master in rhinological work, Sir Felix Semon, who recently, in a discussion of this subject, advocated extreme *conservatism* in *any radical* work upon the accessory cavities, giving for his reason that he has seen no cases *coming to grief,* we all know that we are derelict in our work if we do not act in the radical way, to permanently relieve certain conditions, which if they do not threaten life at least make life not worth living. Obviously it depends upon what constitutes the condition which Sir Felix calls "grief." Usually in all cases of multiple sinusitis, or even in many cases of chronic *frontal* sinusitis, there is a mental state present which ranges all the way from a depression which incapacitates the patient to states bordering upon suicide.

Aside from these serious conditions, we must all agree that reservoirs of pus whose geographical position are such as to constitute a prolific causal factor in the production of the numerous respiratory diseases make the obliteration not only desirable but obligatory. How frequently do we not find disease of the lungs only a segment in the disease circle running through the cavities of the head which are in a state of chronic suppuration? How futile and often impossible is the application of remedial measures to diseased cavities in the lower respiratory tract while chronic inflammatory and often infectious exudates from the upper cavities drain down upon them!

In this respect it will be plainly seen that the frontal cavities are the greater sinners; and as a matter of fact, of all the accessory sinuses the obliteration of the latter is the most frequently indicated. The fact that the maxillary sinuses are the most frequently found diseased is no doubt due to their location relative to the frontal sinuses and anterior ethmoid cells—their funnel-shaped openings invite the dumpings from these upper cavities and convert them into receptacles for these dumpings.

In regard to the destruction of any function that these cavities may have, it may be perhaps sufficient to say that we must choose between the least of two evils.

Fourth. After ruling out elderly people and people who have other serious diseases, as of the heart, kidney and lungs, we may, I think, say that all other cases which have had effective intra-nasal

treatment, without cure, if they desire to be permanently rid of their diseased cavities, must submit to the obliterative work.

In answer to a query recently put to Coakley, he says:

"I firmly believe that obliteration of the accessory sinuses is the only sure and permanent cure for chronic suppurative sinusitis. The method by which this is to be accomplished must vary considerably with individual cases. While I have been exceedingly successful with the methods advocated in the aforesaid reprint,* wider experience has led me to believe that in some cases other methods of treatment accomplish the same result with less discomfort to the patient."

I think we can all agree with Dr. Coakley's general statement; but in it we no doubt all see an opportunity and the necessity for fine discrimination as to just what class of cases comes under the head of the "some cases" referred to in his modifying statement. I would more especially make it apply to those of the maxillary sinuses—in which other methods "will produce the same results with less discomfort to the patient"*

Fifth. There are numerous other considerations, for the most part such as affect the patient.

In general, the whole patient must enter into the problem. The *man* must be considered. It is obvious that he must be rather extraordinarily qualified, at least in three respects: 1st: Morally, he must have more than ordinary patience and faith in the operator. 2nd: Intellectually, he should have a more than ordinary understanding of the condition, procedure and result expected in order to insure that patience. 3rd: Physically more than ordinary endurance. And a 4th qualification might be added, financially. As human nature and conditions are constituted, this may make for or against the success.

Sixth. Again, it is not always possible to take in every factor that will determine the method of procedure until the cavities are actually opened and explored.

Not to prolong this presentation, I would refer the fellows to Dr Coakley's exhaustive resumé, for further conditions that call for the open operative method, in his admirable paper on "Frontal Sinusitis; Diagnosis and Treatment."

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* COAKLEY: Frontal Sinusitis; Diagnosis and Treatment.

CONCERNING THE RADICAL TREATMENT OF CHRONIC DISEASES OF THE ANTRUM WITH SUGGESTIONS FOR A NEW METHOD IN OPERATING BY THE SUBMUCOUS RESECTION OF THE LATERAL NASAL WALL.*

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The chief objection to the generally accepted radical operative procedure for the relief of chronic disease of the maxillary antrum, i. e., the Luc-Caldwell operation, to my mind has been that it offered no opportunity for visual control of the operative field during the after treatment. To review briefly the steps in this operation, it consists in:

1. A mucous membrane incision above the alveolar margin and retraction of the mucous membrane and periosteum.

2. The removal of the anterior antral wall.

3. More or less complete curettage of the lining membrane of the antrum.

4. Formation of a counter opening into the nose, by removal of a part of the lateral wall of the nose.

5. Formation of a mucous membrane flap from a part of the lateral wall of the nose to insure permanence of the opening into the nose.

6. Suturing of this flap in place to the floor of the antrum.

7. Packing the antrum with gauze, the ends of which extend into the nostril.

8. Suturing the initial incision for primary union.

Five to eight days later, the gauze is removed through the nostril and the after treatment is carried out through the nose by means of irrigation, insufflations, etc. By this method many cases pass through a brief convalescence to a satisfactory termination. Many however, fail of a complete cure. Failure has been ascribed to many causes, such as:

1. Great size of the antrum.
2. Essentially chronic character of the disease process.
3. Marked degree or character of the pathological change.

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4. The extent of the pathological process which may have involved all or nearly all the other accessory cavities.

In many cases failure has been due, without question, to one or all of these causes. It has seemed to me, however, that if a satisfactory and thorough operation has been performed, and all or nearly all of the disease eradicated, cure should result in cases where failure has been recorded.

Opportunity has been afforded me to reopen antra that have been operated upon radically by the above method, and I have found in some of them irregularities in the healing process which, although sometimes distinctively reparative in their nature, have been instrumental in prolonging convalescence or even making a cure impossible, in some places exuberent and purulent granulations or infected epidermis, in others depressions in a thickened mucous membrane which contain pus. Occasionally there are seen bands of adhesions that more or less completely wall off sections of the antrum and divide it into chambers, one of which may be healing, while others contain pus.

Until recently, the only method by which the antral cavity could be kept under observation after operation was by leaving the initial incision open and carrying out the after treatment through the canine fossa until healing had progressed to such a point that the initial incision might safely be sutured and treatment carried out through the nose. Many objections have been raised to such a procedure:

1. The after treatment is painful.
2. The wound must be kept packed.
3. The patient's saliva is kept saturated with iodoform.
4. Reinfection from the mouth secretions continually takes place.
5. Deformity of the cheek sometimes occurs.
6. Subjective sensations of pain, cold and discomfort frequently persist as long as the opening is allowed to remain.

Friedrich, in 1905, was the first to depart from the accepted method by making a skin incision around the ala. Through this incision he removed the anterior antral wall, the lateral wall of the nose and the lateral wall of the pyriform opening together with the anterior half of the inferior turbinate. He then packed the antrum with gauze and allowed the ends to extend into the nostril in the

usual way. The skin incision was then sutured for primary union. Of course objections to this method of operating are readily seen. It offers danger of scar and of wound infection and increases the gravity of the operation.

Kretschman made the second advance by doing the ordinary Luc-Caldwell operation through the usual alveolar incision, and in addition removing the lateral wall of the nose as far as the lateral wall of the pyriform opening. This he left standing for fear of deformity. By this method he hoped to secure some view of the antrum throughout the convalscence, but as one can readily demonstrate by doing the operation, he failed.

Later Denker made a decided advance by doing the Luc-Caldwell and in addition removing the lateral wall of the nose, including the lateral wall of the pyriform opening. The flap was cut in the usual way and the antrum packed. The initial incision was sutured. This operation converts the nose and antrum roughly into one cavity, of which a fairly comprehensive view can be secured through the nose. He reports three cases, in the first of which he was not successful on account of the presence of a complication involving the frontal sinus. The patient was, however, much improved. In the other two cases, the patients were very greatly benefited, the only remains of the trouble being a trace of moisture upon washing.

I have operated seven cases somewhat after this method. In the first three, I followed it as closely as might be. In the last four, I varied it as follows:

1. Incision through the alveolar mucous membrane to the median line.
2. Retraction of the soft parts.
3. Removal of the lateral wall of the pyriform opening and the lateral wall of the nose backwards for about two-thirds of the distance of the attachment of the inferior turbinate, and upwards from the floor of the nose to and including the attachment of the inferior turbinate.
4. Removal of as much of the anterior wall of the antrum as seems necessary.
5. Formation of the mucous membrane flap which is turned down into antrum.
6. Packing the antrum with gauze, the ends of which extend into nostril.
7. Suturing of initial incision for primary union.

Such an operation should be preceeded about two weeks by a preliminary amputation of the anterior half of the inferior turbinate. The technique offers a few difficulties not encountered in the Luc-Caldwell, chief of which is the thorough removal of the nasal wall along the attachment of the inferior turbinate. It presents several advantages:

1. It offers a satisfactory view of the antrum through the nose during the after treatment.

2. It permits careful observation and control of the healing process.

3. It can be made as radical as necessary by removing the entire anterior wall and entering the ethmoid and sphenoid, or it can be made a comparatively conservative operation by removing less of the anterior wall of the antrum and the lateral wall of the nose if, at the time of operation, closer examination of the condition renders the more extensive operation unnecessary.

4. The after treatment is painless.

5. The greater part of the after treatment can easily be carried out by the patient.

I wish briefly to report the following seven cases:

CASE 1. Mrs. D., 40 years. Came to hospital on account of antrum disease which began five years ago during an attack of grip, with pain and swelling of the side of the face. Pain was much worse in the morning. During the afternoon profuse discharge would appear in the nostril. Pain lasted for about five weeks, but discharge persisted. At this time, a healthy first molar was extracted in order to establish communication between the mouth and the antrum. A slender gold tube was inserted and held in place by means of a silk thread fastened to an adjoining tooth. This tube she has worn ever since. Se has had occasional exacerbations of the trouble. Five days ago she lost the tube in the antrum. Transillumination positive.

Examination. Nose right strings of pus throughout the nose and the post nasal space. Polypoid degeneration of the anterior end of the middle turbinate. Mouth in fairly good condition. Culture from antrum shows streptococcus. X-Ray discovers the foreign body in antrum.

March 14, 1906. R. Radical antrum operation; ether 1½ hours. Antrum of great size filled with stinking pus. Mucous membrane shows marked polypoid degeneration. Curettage of entire cavity. Removal of greater part of the anterior antral wall and of the lateral wall of the nose, including that of the pyriform opening in its

lower half. Foreign body recovered. Sinus through tooth socket closed.

March 18. Gauze and stitches removed. Slight amount of pus.

March 31. Patient discharged. Antrum dry. Given tube for necessary irrigation.

May 31. Returned for control. Antrum dry. Practically no discharge since leaving hospital.

CASE 2. Damsma, laborer, 29 years, Kalamazoo, Mich. Comes to hospital on account of discharge of pus through socket of an extracted tooth. This discharge has persisted since the tooth was removed a couple of years ago.

Examination. Moderate hypertrophy of inferior turbinate. Some oedema of middle turbinate. Pus in middle meatus and generally throughout the nose. Sinus leads upwards through the socket of the left first molar tooth. Pus appears through this sinus.

March 2. Anterior half of left inferior turbinate removed.

March 16. Culture from antrum shows streptococcus.

March 16. Radical antrum operation, left. Ether, 1½ hours. The radical operation was performed with removal of the lower half of the bony wall of the pyriform opening. Antrum enormous and contains fair amount of muco pus. Lining membrane shows marked hypertrophy with some polypoid degeneration. It was thoroughly curetted. Usual mucous membrane flap, antrum packed with gauze and initial incision sutured. Sinus through tooth cavity curetted.

March 21. Gauze removed. Slight amount of pus.

April 10. Patient given a Halle canula and allowed to carry out daily irrigation. Occasional observation of antrum through nose with applications to healing surface.

May 11. Finger passed through nose into antrum shows everywhere lining membrane perfectly smooth. Antrum is apparently perfectly healed, although as every effort to close the sinus through the tooth cavity has been unsuccessful there still remains some secretion which reaches antrum from mouth.

CASE 3. Mrs. M. Denver, 36 years. Two years ago during an attack of grip contracted an attack of acute disease of the left antrum. Condition was allowed to become chronic. A year ago first upper molar was extracted, communication established between antrum and nose and a gold tube inserted. This tube she has worn ever since. She has continual discharge with some pain and swelling of cheek and eyelid despite daily irrigation.

Examination. Moderate oedema of anterior end of middle turbinate. Small amount of pus on posterior end of inferior turbinate. Probe passed through sinus in tooth cavity reveals thickened mucous membrane, with granulations high up and far back. Transil-

lumination positive. X-ray shows slight diffuse haze over entire antral region.

May 13, 1906. Radical antrum operation. Ether, 1¾ hours. Mucous membrane of antrum shows marked polypoid degeneration about upper end of sinus. Far back beneath orbit were several polyps and some pus. Antrum and ethmoid thoroughly curetted. Lateral wall of nose together with part of bony wall of the pyriform opening removed in the usual way. Usual flap, packing and suture of initial incision. Sinus through tooth curetted.

May 18. Gauze removed.

June 10. Under daily observation through nose, antrum has healed. For several days has been no pus.

June 23. Remains dry.

CASE 4. Acker, laborer, 31 years, Raber, Mich. Comes to hospital on account of discharge from right nostril which has persisted for four years without other symptoms. Four years ago contracted syphilis, which has been throughly treated without appreciable effect on the antral condition.

Examination. Considerable oedema of entire nasal mucous membrane. Marked oedema of both inferior and middle turbinates. Right side shows middle meatus filled with crusts and pus. Nasopharynx also contains considerable amount of pus and dry secretion. Transillumination positive. X-Ray indefinite.

April 24, 1906. Radical antrum operation, right. Ether, 1½ hours. Operation performed in usual way with resection of anterior antral wall, lateral nasal wall and bony wall of pyriform opening. Flap formation, packing and suture. Antrum was found to contain small amount of pus having a somewhat foul odor. Median wall of antrum was dark, soft and rather sugary, evidently carious. Thorough curettage of antral lining and of ethmoid.

May 29. Gauze removed.

May 10. Developed metastatic thrombo-phlebitis.

May 30. Antrum dry. Considerable secretion in nose in the neighborhood of the ethmoid. Patient disappeared.

June 15. Antrum dry. Small amount of secretion in ethmoid. Patient disappeared.

July 15. Patient reappeared. Antral mucous membrane smooth and cavity apparently dry. Some flakes of secretion appear on washing.

CASE 5. Miss H. Nurse. Has had discharge from left nostril with occasional pain in left cheek since attack of grippe about two years ago. At times there is some odor in nostril.

Examination. Hypertrophy of both inferior turbinates. Fair amount of pus in left nostril and in nasopharynx.

Transillumination positive. X-Ray questionable.

August 9, 1906. Left radical antrum operation. Ether, 1¼ hours. Operation in the usual way with resection of anterior antral wall, lateral wall of nose and lateral wall of pyriform opening, packing, flap and suture. Antrum contained much creamy pus, mucous membrane showed considerable thickening.

August 17. Gauze removed.

August 30. Patient has had daily irrigation with occasional application of silver nitrate solution, 10 gr. to the ounce. Slight discharge.

October 1. Antrum has been dry for some time.

CASE 6. Mrs. F. Trouble began four years ago with headache, soreness, sense of tension in head and in right cheek. No swelling or discharge until opening was made through socket of first molar tooth which tooth was extracted for the purpose. Since then has had continual discharge through tooth cavity with frequent swelling and pain in check and lower eye lid .Two years ago had a nose operation on the right side.

Examination. Right. Anterior end of middle turbinate gone. No pus in nose. Marked hypertrophy of inferior turbinate. Sinus leads up through socket of first molar tooth. Irrigation through sinus allows pus to escape through nose. Patient complains of considerable pain in region of antrum and above right eye, which persists almost without intermission. Transillumination positive for antrum and frontal sinus.

December 4, 1906. Radical antrum operation., Ether 1½ hours. Operation in the usual way with resection of anterior antral wall, lateral wall of nose and pyriform opening. The antrum was found filled with pus and thickened membrane to such an extent that cavity was almost obliterated. Cavity thoroughly curetted, ethmoid entered, found filled with infiltrated membrane and obliterated. Usual flap, packing and suture. Tooth sinus curetted.

December 7. Gauze removed, free escape of pus. Satisfactory view of antrum secured through nose.

December 20. Daily treatment, pus in slight amount from antrum, but in considerable amount from frontal sinus.

January 15. Antrum apparently almost healed. Still considerable pus from frontal with pain and headache. Killian operation advised.

February 10. Apparently very slight amount of pus in antrum which seems to be lined with a smooth membrane. Still pus from frontal.

June 20. Antrum healed. Has been dry two months. Some pus from frontal.

CASE 7. Mr. J., dental student, 28 years. Has had discharge from antrum for about three years. In the beginning, it was supposed to come from a diseased first molar, so the tooth was removed and communication established through its socket between antrum

and mouth. Since then continual discharge from mouth and from nose.

Examination. Nose negative except for small amount of pus on nasal floor. Sinus through second molar through which pus appears. Probe passes up into a small antrum and discovers soft granulations. Two weeks treatment was quite without result.

January 14, 1907. Radical antrum operation, left. Ether, 1 hour. Usual operation with resection of lateral wall of pyriform opening, lateral wall of nose and part of anterior wall of antrum. Antrum found to be very narrow, but fairly deep. It contained pus and degenerated lining membrane considerably thickened and degenerated. Ethmoid was entered, found involved and curetted. Usual flap, packing and suture.

January 18. Gauze removed.

Febuary 18. Very slight amount of secretion in antrum when washed. Ethmoid area shows some crusts and secretion.

May 1. Dry.

In looking over this short series of cases I feel that the results are more satisfactory than those secured by the Luc-Caldwell operation. After the latter operation the subsequent treatment must be carried on largely in the dark, and the condition of the antrum inferred from the amount of discharge and the severity of the symptoms. After the operation just described treatment can be carried out under visual control, the healing process watched with ease and the final result looked forward to with some degree of certainty.

The above operation then offers a fairly satisfactory way of dealing with chronic antral disease, either simple or combined. It has seemed to me, however, that an operation that would afford free access to all the accessory sinuses without an incision through the buccal mucosa would offer many advantages. My last case, therefore, I have operated upon entirely through the nose by a submucous resection of the lateral wall of the nose, as follows:

1. Preliminary amputation of the anterior half of the inferior turbinate two weeks, if possible, before the antrum operation.

2. Infiltration anasthesia with ¼% cocain in 1-5000 adrenalin injected along the lateral wall of the nose and the anterior wall of the antrum.

3. An incision through the soft parts of the nostril at the junction of the skin and mucous membrane, beginning about the middle of the lateral wall of the pyriform opening and carried well down to the floor of the nose. This incision passes through the periosteum to the bone and corresponds exactly to the lateral wall of the pyriform opening.

4. Elevation of the mucous membrane and periosteum of the lateral wall of the nose from the floor of the nose to the level of the insertion of the inferior turbinate and backwards as far as the inferior turbinate has been amputated.

5. Elevation of the periosteum of the anterior antral wall for any desired distance.

6. Removal of the inferior half of the lateral wall of the pyriform opening and the lateral wall of the nose over an area corresponding to that part from which the mucous membrane has been elevated.

7. Removal of the desired amount of the anterior antral wall, i. e., enough to allow view of antrum.

8. Penetration of the lining membrane of the antrum and inspection of the cavity.

9. As thorough curettage of the antrum as necessary.

10. Curettage of the ethmoid and entrance of the sphenoid if indicated.

11. Formation of a flap of the mucous membrane of the lateral wall of the nose with base downwards.

12. Application of this flap to the floor of the antrum and packing with gauze.

There seems to me to be several advantages in this operation.

1. It can be performed under local anaesthesia.

2. It offers a most satisfactory view of the antrum and maintains it throughout the after treatment.

3. It can be made just as radical or just as conservative as may seem wise as the operation proceeds.

4. It offers the most direct and adequate approach to the ethmoid and sphenoid.

5. It necessitates no buccal incision.

6. It requires no suture.

7. It simplifies the after treatment greatly.

8. It accomplishes all that any other operation can in similar condition.

The difficulties of the operation are mainly those encountered in the sub-mucous resection of the nasal septum, increased somewhat by the fact that the lateral wall of the nose is sharply concave and that the bone of the lateral wall of the pyriform opening is

very dense and requires the energetic use of the mallet and chisel or a strong rongeur.

I wish to report the following case:

Mr. S., 23 years, Jackson, Mich. Came to hospital on account of a discharge from the left nostril, which has persisted for some years. Early in the course of the disease the first molar was extracted and communication was established between the antrum and mouth. Through this opening the antrum has been irrigated daily every since without improvement.

Examination. Moderate spur. Left nostril contains pus. Considerable hypertrophy of both inferior and middle turbinate. Probe passes through sinus in the socket of the previously extracted tooth into antrum. Mucous membrane of antrum as felt by probe seems to be soft and velvety. Pus follows the probe.

Operation by the above method allowed free view of antrum, which contained much pus, granulation tissue with some polypoid degeneration. Ethnoids were easily accessible, were found filled with thickened mucous membrane and some pus and were curetted. The flap formed of the lateral wall of the nose was torn so that about half of it was lost. The remainder was turned down over the floor of the antrum, which was then packed with gauze.

I was much pleased with the operation on account of the ease with which the antrum was opened and examined. Almost the entire antrum could be satisfactorily seen. Even far back under the orbit, a region always somewhat hard to see, was clearlyy visible. With the anterior half of the inferior turbinate and corresponding part of the lateral wall of the nose out of the way the ethmoid was thoroughly accessible and was curetted with more satisfaction than I had ever experienced before when attacking it from below.

(Since reading this paper other operations have been *performed* according to the last mentioned method with satisfactory results.)

COMPLETE REMOVAL OF FAUCIAL TONSILS.*

BY OVIDUS ARTHUR GRIFFIN, B. S., M. D., ANN ARBOR, MICH.

Aside from a broader knowledge of detail that results from a repetition of facts, it would be superfluous on this occasion to give an extended discussion of this subject, but inasmuch as unanimity of opinion does not obtain throughout the profession as to the proper method of treatment of diseased faucial tonsils and the best mode of their removal, and being desirous of presenting a method which has proven satisfactory in my practice, I beg to direct your attention to the following facts:

Owing to their intermediate position between the mouth and pharynx and their glandular structure, the faucial tonsils frequently become infected and chronically diseased by the passage of food or foreign matter into the ramifying glandular ducts which open upon their exposed surface, and after a time, their function of pharyngeal lubrication becomes so perverted that the ducts and glands finally become distended and indurated by the retention of a caseated secretion, composed mostly of desquamated epithelium, leucocytes, and micro-organisms. The resulting ptomains of decomposition permeate the surrounding lymphatic system, leading to chronic inflammation of adjacent pharyngeal structures and often evidencing its systemic effect by the production of rheumatic symptoms.

Under these circumstances, it would seem that only one method of treatment would be considered, but a perusal of many books upon the subject indicates that palliative measures in the form of gargles, sprays, and applications to the distended ducts constitutes the rational course of treatment. If there be a broad and devious path that leads to disappointment, both to the patient and attending physician, the above procedure which attacks the disease only superficially or a partial removal of the tonsils certainly points the way. On the contrary, however, a total extirpation of the offending tonsillar tissue offers naught but an ultimate cessation of both local and systematic derangements, and no one more fully appreciates this fact that the writer, who was compelled to undergo an operation by three different laryngologists before his tonsils were completely removed and a train of distressing symptoms permanently relieved.

* Read before the Eleventh Annual Meeting of the American Academy of Ophthalmology and Oto-Laryngology, St. Clair, Mich., August 30, 31 and September 1, 1906.

In common with the experience of fellow laryngologists, I realized that with the armamentarium which obtained until a few years ago it was impossible to effect a complete operation, until an instrument was devised whereby the adherent pillars could be separated from the tonsillar tissue, preliminary to its removal, especially when the tonsils were submerged. Thus it was, and still obtains in the practice of the unskilled, that a majority of the amputated cases had a "recurrence" of tonsils or as the laity put it, "the tonsils grew in again," while the unfortunate sufferer experienced little or no improvement in his condition. To the informed, however, it is evident that the faucial tonsils do not recur after complete removal, and that the return of former symptoms is due to a retention of some of the originally diseased tissue. How often in advising a removal of tonsils for the correction of a pharyngeal or aural disorder have I witnessed that expression of mingled sur-

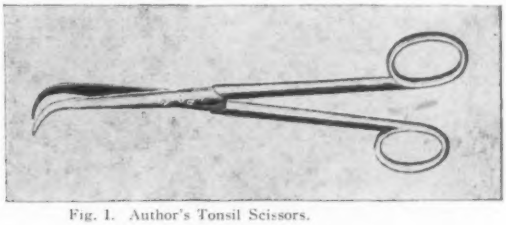


Fig. 1. Author's Tonsil Scissors.

prise and disgust as the unfortunate patient replied: "Why, I had my tonsils removed by Dr. Blank and he charged me ten dollars!" Thus it was, prior to a few years past, that the operation was regarded by both the laity and general practitioner as a simple procedure which anyone could perform, but with improved instrumentation and details of technique, the complete removal of tonsils is now justly regarded as a serious and exacting operation which demands as much dexterity and skill as any major operation to secure proper results, and the compensation should be accordingly remunerative.

Realizing the limitations of the knife, tonsillotome, and snare, several years ago, I devised a scissor whereby the pillars could be severed from the tonsils, but even then I could not in all cases completely remove the base of submerged tonsils or the tissue which obliterated the supratonsillar space between the anterior and pos-

terior pillars, until I finally produced the present form of scissor which is herewith illustrated. By means of this device, the complete operation of separating the adherent pillars and removing the entire tonsil, either right or left, can be effected by the use of a single cutting instrument as shown in following cuts:

In the following illustration (Fig. 2) is pictured a characteristic throat in which the left tonsil is hypertrophied and the ducts distended, while on the other side is located the remains of an unskillful operation or the tonsil may represent a submerged variety. It will be observed that the edges of the anterior pillars are darkened (reddened), showing that a chronic form of inflammation exists behind them whereby the pillars become adherent to the tonsillar tissue.

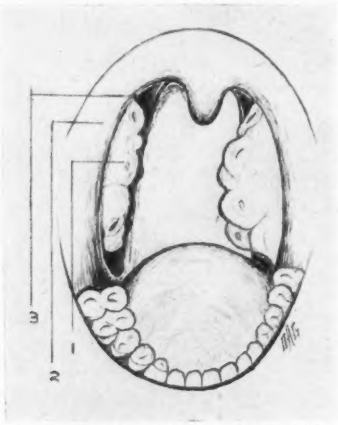


Fig. 2. Hypertrophied Left Tonsil. Submerged Right Tonsil.

With lightning rapidity, the artist has effected a complete removal of the right tonsil as evidenced by the deep, empty tonsillar fossa which is more readily shown by a retraction of the anterior pillar (Fig. 3), and in the following cuts, the details of the procedure are fully illustrated. When traction is applied to an adherent or submerged tonsil, the attached pillars are also drawn toward the median line so that the base of tonsil cannot be reached until the pillars are severed from the tonsillar tissue. In Fig. 3, the anterior pillar is being separated by means of the scissor, although a curved knife may also be employed, but dense tissue can-

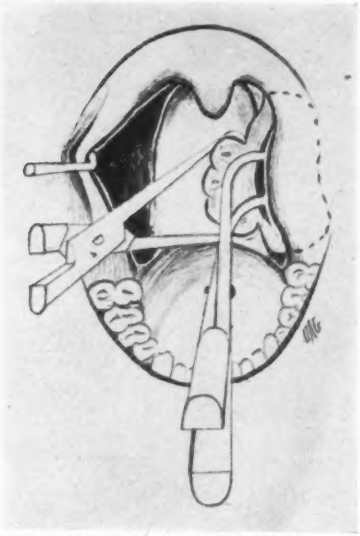


Fig. 3. Right Tonsil Removed, Separating Left Anterior Pillar.

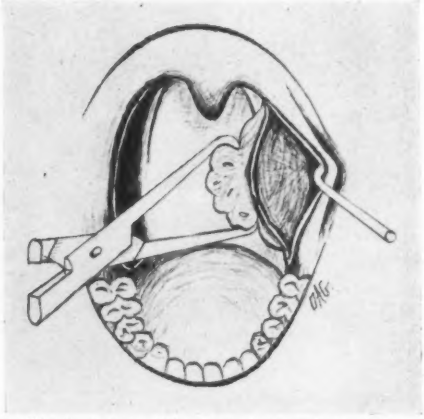


Fig. 4. Anterior Pillar Separated and Retracted.

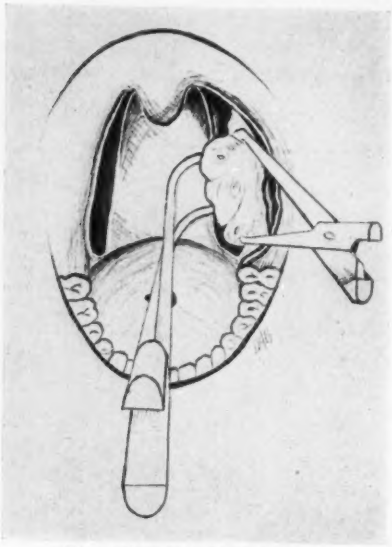


Fig. 5. Separating Posterior Pillar.

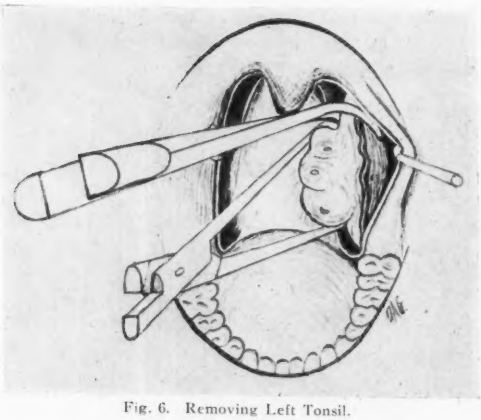


Fig. 6. Removing Left Tonsil.

not be as effectually cut by a knife. The dotted line indicates position of base of tonsil to which point the pillar must be loosened.

After the anterior pillar is separated, the traction forceps are changed so that the tonsil is drawn forward and outward when the posterior pillar is easily severed as shown in Fig. 5.

After both anterior and posterior pillars are separated, as illustrated in Fig. 6, the opposite angle of mouth is retracted by an assistant and the tonsil is strongly drawn from its fossa toward the median line, while the scissors are introduced into the supratonsillar space and pushed in deeply so as to reach the base of tonsil before beginning to cut. In this manner, the cavity will be left smooth and clean. The incision is continued downward until the whole base is separated. In some instances, matters may be facilitated by reversing the scissors and cutting upward from the bottom after the supratonsillar attachment is separated or they may be introduced from the front and the pillars pushed away by the flat surface of the scissors while the curved portion is forced deeply into the tonsillar fossa to reach the base of tonsil and complete the operation. In many cases owing to gagging movements of the patient, it may be necessary to remove the tonsil in several pieces, but in favorable instances, the whole mass can be separated at once.

In regard to the occurrence of hemorrhage, it has been my experience that the bleeding from a complete removal of the tonsils is not more profuse than when a partial extirpation is effected, inasmuch as the remaining soft tissues are favorable to a prompt contraction and retraction of the severed blood vessels, while an indurated mass which often remains after a partial removal tends to prevent a closure of the vessels and thus favors prolonged hemorrhage.

While my scissors were devised primarily as a tonsil instrument, I have found them admirably adapted for enucleation of the eye, eviceration of the orbit, and separating adhesions of the palate or uvula to the pharynx.

The scissors are made by F. A. Hardy & Co., Chicago, and H. Pfau, Berlin, Germany.

340 S. State Street.

TUBERCULAR INFECTIONS OF THE FAUCIAL TONSIL.*

BY CHARLES M. ROBERTSON, M. D., CHICAGO.

Tubercular infection of the tonsil is of frequent enough occurrence in this locality to command especial attention, as shown in the research of the author. In my report it was found that 8% of patients presenting for nose and throat symptoms, exhibited primary tuberculosis of the faucial tonsil. It was further found that a large number of these patients exhibited lung tuberculosis as a direct infection from this gland through the lymphatic chains.

The tonsil may become tuberculous in one of three ways.

1. By infection from the presence of tubercular material in or about the tonsil from inoculation by the air, or from food introduced into the mouth coming in contact with the tonsillar gland.

2. From inoculation by sputum coughed up from a tubercular lung producing an inoculation on the surface membrane of the tonsil.

3. From infection by the blood through lymphatics.

The first is a primary and the second and third are secondary infections. The first interests us most, for with proper means, we can avoid the occurrence of the disease by ablation of the gland.

If we inoculate the tonsil with strong tubercular cultures we are able to produce this infection of the gland. We are aware that it is harder for an inoculation to take place on the surface membrane of the gland than in the crypt because of the thickness of the covering of the tonsil by squamous epithelium. The lining membrane of the crypts is much thinner and we have therefore a more favorable site for the infection to take place. This is borne out by observation.

In caseous tonsils we have crypts filled with cheesy material composed of epithelial cells and mixed substance containing numerous varieties of bacteria. The crypts most constant in filling with such material are those which have some obstruction to the opening. These we find in the upper part of the gland, or in the supra-tonsillar fossa. This occurs constantly or at intervals and the crypt being filled with material is squeezed between the anterior and posterior pillars and the superior constrictor muscle of the pharynx at each act of swallowing.

If the opening of the crypt is occluded or pressed upon, the material is pushed deeper into the crypt or out into the supra-tonsillar space along the line of least resistance. In this way the crypt extends deeper and becomes larger in size, so it is common to find them extending to the extreme periphery of the gland as far as the capsule.

* Read before the Joint Meeting of the Chicago Medical Society and the Chicago Laryngological Society, March 21, 1907.

Here this material lies and decomposes forming an auto-infection which occurs most frequently in the depth of the crypt.

The lymph bodies then take up the tubercular infection. In examining hundreds of tonsil specimens, it was found that solitary lymph bodies broke down with epithelioid degeneration and showed the presence of tubercular giant cells. The infection is taken up readily by the lymphatic glands as was shown by tubercular infection of the cervical lymphatics before the infection in the tonsil had affected more than two or three lymph bodies surrounding a crypt. The tubercular change was never found to extend from one crypt to another. The lymphatic nodes infected from a crypt was limited to one trabecular area.

Infections other than tubercle are found, as was demonstrated by the gentlemen proceeding me, and there is no rule by which the virulency of the infection can be gauged. Thus we may have an infection occurring over a long period of time, the lymphatics passing the infection to the blood without much enlargement of the lymphatics. On the other hand we may have an infection coming on suddenly and in greater quantity which may produce a large amount of swelling of the lymphatics and still not much of the infection reach the general system. This is brought about by the destructive properties of the lymphatics to infective material. Often the infection thus introduced is explosive but not serious, being of a less dangerous bacteria. In these cases the lymphatics in the neck become large but disappear after the infecting bacteria are destroyed by phagocytosis in the glands affected.

The scope of this paper was not to extend beyond the tonsil itself; and, in order to show the process of infection of the gland, it is necessary to consider the process of entrance of infection first into the crypt and then from the crypt into the tissue surrounding the same.

That we may understand the tonsil let me invite your attention to a few points as to the anatomy of the part. The tonsil, as we know, is a lymphatic gland lying in the tonsillar fossa. It does not usually occupy the entire space, there being a fossa above the tonsil called the supra-tonsillar space. This supra-tonsillar space varies in size according to the size of the gland. It is usually found as a conical or triangular cavity with the apex outward. It is bounded in front by the anterior pillar, behind by the posterior pillar, above by the junction of the two pillars, while the floor is formed by the top of the tonsil. Into this space empty the superior crypts of the tonsil. They vary in number; but four crypts are almost constant. They empty their contents into the supra-tonsillar fossa which communicates with

the pharynx. Very often the edge of the anterior pillar, which in foetal life extends backward more or less completely covering the tonsil, is persistent and when so, is known as the plica tonsillaris. This membrane varies greatly in its extent and likewise in its consistence. At times it is thin and web-like, while at other times it is a tough and thickened membrane which may or may not be attached to the gland itself or to the posterior pillar behind. The presence of this membrane has much to do with the retention of secretion in the supra-tonsillar fossa and when it becomes swollen and indurated it can cause a complete closure of the supra-tonsillar space. This is especially true when the tonsil has hypertrophied in an upward direction. It is common to observe tonsils which are so hypertrophied as to destroy this supra-tonsillar space by the extension of the tonsil upward and outward into the tissues of the soft palate. I have often observed tonsils which extended as far as the under surface of the Eustachian tube.

Thus it will be understood that material in the crypts of the top of the tonsil when squeezed by the action of the anterior and posterior pillars and the superior constrictor muscle of the pharynx, will find resistance at the mouth of the crypt as a result of which the material will be pushed deeper into the crypt. We therefore find these crypts extending to the external wall or capsule of the gland and filled with caseous material. This does not hold true of the crypts emptying directly into the throat from the fact that there is nothing to cover the openings of these and too because they empty downward and inward. When the patient swallows they are squeezed and the material contained in them is emptied into the throat.

If then we have the superior crypts, or the four which empty into the supra tonsillar fossa, which were called by the author, [1] "*the infecting crypts of the tonsils,*" filled with caseous material which cannot escape, we have the focus for an infection. The lining membrane of the crypt becomes infected first in the deepest part and we find the lymph nodes breaking down in this space. The infection as seen in the sections is less and less marked as you proceed from the deepest part of the crypt toward its opening. I have seen no specimen where the infection from one trabecular area has affected a trabecular area adjoining. From these lymph nodes which break down into true tubercular areas showing the epithelioid tissue with giant cells, the infection is carried to the submaxillary gland first and from this gland to other glands of the cervical chain of lymphatics.

100 State Street.

1 Certain Facts Concerning Faucial Tonsils. *Journ. Am. Med. Soc.*, Nov. 24, '06, p. 1725.

SARCOMA OF THE NOSE. TUMOR SPRINGING FROM THE LOWER TURBINATE. SUBSEQUENT ENLARGEMENT OF SUBCUTANEOUS GLANDS OF THE ENTIRE BODY.

BY WILLIAM C. BRAISLIN, M. D., BROOKLYN, N. Y.

An unusual feature of the case here reported was the involvement of the subcutaneous lymphatic glands by progressive extension from the region of the tumor, until the glandular lymphatic system was practically mapped out over the entire body surface by well-traced subcutaneous nodules.

The history in brief is as follows: Mrs. E. M., 57 years of age, and the mother of six children, was sent to me by her physician. Her complaint was of profuse nose-bleeds for a period of about a half-year, the worst of which occurred about five weeks before, when the hemorrhage was checked by her physician only after considerable difficulty. Since then, the affected side had been entirely blocked, and she had experienced some pain. There was a recurrence of nose-bleed on the morning of the day of examination. The affected (left) side of the nose was completely obstructed. Slight swelling was visible on the outside of the nose.

A diagnosis of sarcoma was made and an operation under ether was performed. The entire thickness of the bone was removed, so that the lower nasal fossa opened into the maxillary antrum. Hemorrhage was free, but was easily checked with adrenalin solution. The dressing used was iodoform gauze. Recovery was apparently complete in three weeks. The scar was clean, there was no suppuration, nor any sign of the presence of malignancy. In six months there was a slight recurrence, a small, edematous, easily bleeding tumor appearing at the anterior end of the scar, which simply created obstruction, no pain nor spontaneous hemorrhage existing. This enlargement was removed with the snare, with slight hemorrhage. Knowing that relief from snaring could be but temporary, a further operation was advised for the removal of the superior maxilla, but was declined; and the patient passed from observation for a period of three or four months. At the end of that time there was an aggravation of the symptoms, and she reported the appearance of several subcuticular nodules on the neck, axilla and breast. She was seen by me but once later, when I was sent for to call at the

patient's bedside. The left side of the face was slightly swollen. The nose was not markedly obstructed. Fortunately, her pain was but slight; but her physical condition had greatly deteriorated. The entire subcutaneous lymphatic system seemed to have become infected, and appeared in prominent nodules over the body surface. She considered herself doomed from the beginning of her illness, and had been unwilling to submit to measures for her relief other than as stated. This, though unsuccessful as regards the termination of her life, certainly tended to greatly relieve her suffering.

Twenty Cases of Chronic Suppurative Otitis Media Treated by Photo-Therapy. J. DIONISIO, de Turin. *Rev. Heb. de Laryngol., D'Otol. et de Rhinol.*, Oct. 13, 1906.

Dionisio, who has been an advocate of this method of treatment, and who has opened a clinic for the treatment of ozaena and chronic otitis media by means of photo-therapy, gives the result of twenty cases of several years' duration which had proved rebellious to medical treatment. Of these twenty cases, some unilateral and others bilateral, there were sixteen cures, dating from a period of three years to three months. In nearly all the patients there was a marked improvement in the audition. In two cases the improvement was so slight that they could not be considered as benefited.

In the patient who did not complete his treatment, there was an improvement only. In another, no benefit. The noticeable feature was the general improvement in the auditory acuteness, an effect which irrigation, cauterizations and other non-surgical methods had heretofore been unable to obtain. SCHEPPEGRELL.

SINUS THROMBOSIS AND NECROSIS OF THE HORIZONTAL SEMICIRCULAR AND FACIAL CANALS, FOLLOWING CHRONIC PURULENT OTITIS MEDIA; CHOLESTEATOMA, PERISINUS ABSCESS, RESECTION OF JUGULAR VEIN, RADICAL OPERATION, RECOVERY.*

BY LOUIS OSTROM, M. D., ROCK ISLAND, ILL.

Miss G.—— S.——, age 22, seamstress. Family history negative. At 6 years of age she had diphtheria, accompanied by double otitis media purulenta acuta, which became chronic. At no time during the last sixteen years has the patient had earache, and only slight discomfort from a slight discharge. Hearing has at no time been good; in fact, preventing her from pursuing studies enabling her to teach school, which was her original intention.

For three or four weeks before I saw her, she suffered from constant headache, occasional vertigo, with nausea and vomiting, loss of appetite, extreme weakness and mental stupor, from which she could with difficulty be aroused, and into which she at once lapsed.

On June 5th, 1906, Dr. Eli Bradford, her physician, asked me to see her, when I found her in the following condition, to wit: She complainted of great headache and tenderness on pressure in front of right ear, over the zygomatic roots, in the temple, and between the angle of the jaw and mastoid process (probably at the beginning of the jugular vein or bulb). There was no tenderness over any portion of the mastoid process or jugular vein. The meatus was filled with foul-smelling pus, and half filled with granulations and cholesteatomatous flakes, which microscope examination showed to be cholesterin crystals and mixed infection. Vertigo at this time was almost constant. With eyes open, it was clockwise, or from left to right; and with eyes closed, anticlockwise, or from right to left; that is, the sensation was that of spinning around. The vertigo was less when lying on the left side, and very much worse when lying on the right side, when pain, nausea and vomiting were also aggravated.

On the next day, the granulation tissue in the meatus was snared off, and the tympanic cavity curetted under nitrous oxide

* Read before the Chicago Laryngological and Otological Society, Dec. 11, 1906.

gas. With the removal of a good deal of granulation tissue and cholesteatoma, she felt very much better; headache was almost gone; there was no vertigo, nausea or vomiting, though there was a slight tendency to vertigo when lying on the right side. Weak bichloride solution wash and iodoform alcohol drops were ordered to be used every three hours. During the next week she was quite comfortable, the only disagreeable feature being the tendency to vertigo when lying on the right side.

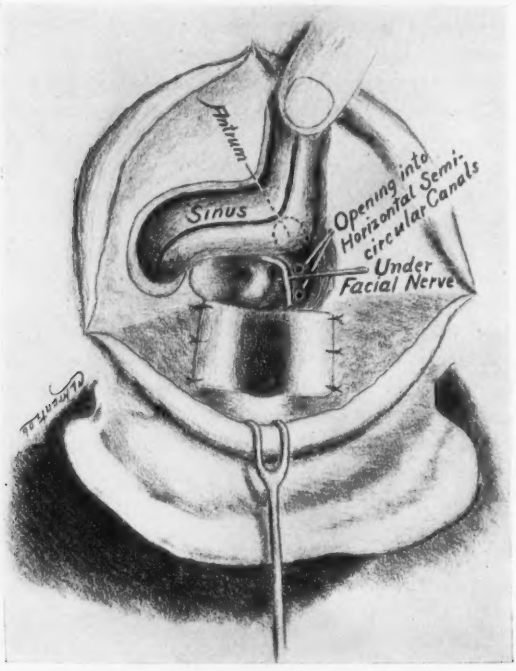
On June 13th she complained of pain "way in" in the right ear. There was no tenderness on pressure, vertigo increased, with nausea and vomiting and return of headache. In the evening she had a chill, followed by a temperature of 105 2-5°, pulse 120, respiration 26, and a profuse sweat. The same occurred twelve hours later, with facial paralysis of right side. Pulse at noon, 120; temperature, 99½°. She was sent to St. Anthony's Hospital for immediate operation.

June 14th.—Ether by Dr. Gaunt, assisted by Dr. Bradford; present, Drs. Dart and Snively. Temperature at time of opera-

tion, 104 2-5°; pulse, 140; respiration, 28. The usual incision was made back of right auricle, and with gauge and hammer I went through one-eighth inch cortex, and met necrotic bone, pus, granulations, and cholesteatoma; the upper one-half inch of sigmoid sinus was covered with granulations and pus (Perisimus abscess). The sinus looked suspicious, but filled readily on pressure above and below, respectively. It had an appearance between the normal pearly blue color and the lusterless pearly color. The sigmoid sinus was less than one-eighth inch behind the posterior wall of the bony meatus. The antrum was small, and covered externally by the sigmoid sinus, and filled with granulations and cholesteatoma. By reason of the anatomical relations caused by the far-forward sigmoid sinus and small antrum, the radical Swartze-Stacke operation was performed, in order to clean out the tympanic cavity. When it had been thoroughly curetted free from all granulations and necrotic bone, the horizontal semicircular canal was found necrotic with loss of all the ridge or prominence which is usually such an important landmark in this operation. The loss of substance exposed the two arms or tubes about three-sixteenths of an inch apart, into each of which a probe could easily be passed, and from which pus was oozing. The membranous canal was also destroyed. Just below it, the facial nerve was exposed by necrosis of its bony covering along its entire horizontal course, and one-eighth inch below the knee or bend, along its vertical course as far down as just below the pyramid for the stapedius muscle, that is, about three-eighths of an inch, in all, of the facial nerve was exposed, and a part lying free from its canal. Both the semicurcular and facial canals were, of course, very carefully curetted free from all carious bone and granulations, and wiped dry with cotton swabs. The mouth of the Eustachian tube and the tympanic ring were thoroughly curetted with the purpose of obliteration. All that was found of the ossicles was the head of the malleus. A "T" shaped incision was made in the membranous canal and the flaps sutured above and below, respectively. The wound was closed by sutures, all the dressings and drainage being carried on through the external meatus. When the patient regained consciousness, there was no facial paralysis, she could open and close the right eye as well as the left, and facial movements were symmetrical. The pathological report of mastoid contents was mixed infection and cholesterin crystals. The blood count showed 82% of polynuclear leucocytes.

June 15th.—Temperature at 8 a. m., 99°. At 1 p. m. there was a chill, lasting about twenty minutes, with temperature, 105 4-5°; pulse, 144; respiration, 28; followed by a profuse sweat. By exclusion, the diagnosis of sinus thrombosis was made, and it was decided to operate the next morning.

June 16th.—Ether by Dr. Gaunt, assisted by Drs. Bradford and Arp. Present, Drs. Dart, Snively, Comegys, Bernhardi, West,



Sinus Thrombosis and Necrosis of Horizontal Semicircular Canals, etc.

DeSilva, Bennett. Before exposing the mastoid operative field, an incision was made along the anterior border of the sterno-mastoid from the mastoid process to one-half inch from clavicle. The jugular vein was duly exposed and separated from the vagus and the carotid artery. The facial, which was almost as large as jugular, and other tributary veins were cut between double liga-

tures, and the jugular vein removed between double plain catgut ligatures from near the exit from the skull to near the clavicle. An iodoform gauze cigarette roll was placed in wound for drainage. The wound was closed by continuous sutures, except lower one inch through which the gauze roll protruded. Dry iodoform dressing applied to neck. The mastoid wound was then exposed, sutures and dressings being removed. The mastoid cavity was free from pus, all looked well, and the meatal flaps were adherent and looked healthy. The openings into the horizontal semicircular canal were open and free from pus. The facial nerve looked healthy and its canal clean. Whiting's posterior incision was made, fully exposing the sigmoid and lateral sinus region. The sigmoid sinus looked thickened, and pearly, but lusterless. The knee and one inch of the lateral sinus and the sigmoid sinus downward to near the jugular bulb bared of bone, exposing healthy dura. When the sinus was incised there was free bleeding from the torcular, but none from the bulb, even after curetting into the bulb as far as the curette would reach. The two ends of the opened exposed sinus was packed with iodoform rolls, and after cutting away the infected free sinus walls, the brain area was dressed separately from the mastoid or tympanic cavity, care being used to so arrange the dressings that there should be no infection from one to the other. The posterior (Whiting's) incision was closed with sutures, also the upper portion of the original incision. Dry iodoform dressings were applied, with bandage including head and neck. Only once during the operation was the respiration embarrassed, but by dilation of the rectal sphincter respiration was re-established with no further trouble.

The facial paralysis was absolute for about two weeks, at the end of which time the eyelids could be moved a trifle. The movement of the facial muscles was fairly well established about three months after the operation. Now, six months later, there is no facial paralysis whatever.

When all was healed, a sinus as large as the body of an ordinary lead pencil existed behind the ear, communicating with the tympanic cavity. On November 9th a plastic operation was made for its closure. The upper and lower margin was freely split, and the skin along the entire length of the sinus undermined very freely, trimmed and sutured for primary healing, with the result that now there is no noticeable deformity, and the scars are barely visible, being hidden by the auricle and the patient's hair. The ear has been absolutely dry since first healing.

Repeated careful tests have been made to determine the amount of hearing in the right ear after recovery.

	Right—Open	Right—Closed
Acumeter	Right, 8 in.	Right, 4 in.
Whisper	Right, 3 in.	Right, 0 in.
Voice	Right, 18 in.	Right, 9 in.

The left ear was closed during test.

High tones (Galton whistle)..... 2
Low tones.....Right, 512; left, 128

Bone conduction tests not considered reliable.

Résumé:

1st—Absence of mastoid symptoms.

2d—Alternating vertigo.

3d—Great exposure of facial nerve.

4th—Destruction of bony and membranous semicircular canal.

5th—Great number of complications (cholesteatoma, perisinus abscess, necrosis of horizontal semicircular canal and facial canal, sinus thrombosis, and facial paralysis).

6th—Early and complete recovery of facial paralysis.

7th—Retention of useful hearing.

8th—Far-forward sinus.

9th—Recovery with a dry ear and no deformity.

People's National Bank.

REPORT OF A CASE OF ACUTE MASTOIDITIS COMPLICATED BY AN EXTENSIVE DESTRUCTION OF THE ESOPHAGUS WITH RUPTURE OF THE ESOPHAGUS LEADING TO A PROFUSE HEMORRHAGE INTO THE LEFT PLEURAL CAVITY, THE STOMACH AND MEDIASTINUM.*

BY J. O. M'REYNOLDS, M.S., M.D., LL.D., DALLAS, TEXAS.

The difficulty of the task before me will be appreciated when we remember that the literature on this subject is conspicuous by its brevity and incompleteness of reports, which are conditions antagonistic to a thorough classification of phenomena and a correct estimate of their value.

Sir Morell Mackenzie of London, the most distinguished laryngologist the world has seen, has carefully reviewed the medical literature of the world and has collected more or less fragmentary reports of thirteen authentic cases of rupture of the Esophagus, all terminating fatally from the resulting hemorrhage. As these cases covered a period of about two hundred years and occurred in different parts of the globe, some of them occurred under conditions that were unfavorable for accurate study and thorough description. So with your permission I will pass at once to a consideration of a case recently occurring under my observation and will conclude with some deductions which I feel would be worthy of our thoughtful regard.

CASE 1.—This case presented two separate and distinct conditions, having no connection whatever with each other. One condition was a perfectly plain acute mastoiditis supervening upon a sub-acute involvement of the mastoid antrum and middle ear cavity. The other condition was a complete rupture three inches in length in the lower third of the gullet supervening upon an extensive destruction of the esophageal walls, with resulting profuse and fatal hemorrhage into the pleural cavity surrounding the left lung, into the stomach and mediastinal space.

I was called first in the morning to see the patient, a robust looking boy, several days before his death and found him suffering with an acute inflammation of the middle ear with some pain and tenderness over the mastoid process and a small amount of discharge from

* Read before the Eleventh Annual Meeting of the American Academy of Ophthalmology and Oto-Laryngology, St. Clair, Mich., August 30, 31 and September 1, 1906.

the middle ear. I prescribed for him and left word that I should return to see him again in the afternoon. But before the hour for my second visit I received a telephone message that he was so much better that it was unnecessary for me to call. I then did not see the patient again for a few days, when I received a 'phone message that the family physician, Dr. A. C. Graham, was present and felt that my services were needed. I immediately visited the patient and found that he had just had a well-marked chill with a sudden rise of temperature to 104° F. by mouth. I inspected the drum membrane and found that the discharge had ceased, the membrane was of a dark mahogany hue and was bulging decidedly especially in the postero-superior quadrant. The family physician was unable to explain the sudden rise in temperature by his physical condition other than as found in the region of the ear. So I made the usual incision through the membrane allowing the bloody contents of the cavity to escape, thus relieving the tension in the middle ear cavity, and applied the usual subsequent treatment.

The next morning the fever was still 104° F. by mouth. The discharge from the ear had about ceased, the mastoid tenderness, while not extreme, was quite distinct, the drum membrane was dark red and covered with dead epithelial cells, the muscles of the neck were exquisitely tender on pressure and the slightest movement of the head would cause the patient to cry out with pain; vomiting which had now lasted for several days was becoming more pronounced, no food had been retained on the stomach for several days and frequent vomiting of bile had led to the administration of the mild chloride of mercury. The patient was growing weaker and a consultation was held, at which were present Dr. A. C. Graham, Dr. J. M. Pace, Dr. D. E. Seay and myself. The physical examination of the abdomen and chest failed to reveal any explanation of the high temperature, general prostration, frequent and persistent vomiting and intense thirst. All the physicians present concurred in the conviction that a prominent factor in the production of his symptoms was a rapid invasion of the inflammatory process from the mastoid antrum to the remaining mastoid cells, and this conviction was strengthened by the sudden cessation of discharge from the ear preceding the onset of the chill and subsequent elevation of temperature. These features were regarded as all the more significant because the patient had been for several years the subject of recurring attacks of middle ear inflammation with purulent discharge, since it is well known that in just such cases we will frequently find a very decided involvement of the deeper structures about the ear, with a

minimum degree of superficial disturbance. The existence of the ear affection was absolutely clear and there was no other diseased condition that was discoverable. Our duty then was positive and could not be disregarded. The indication was imperative to offer the patient the only means of relief possible in such a condition. Hence the unanimous conclusion of all the attending physicians was that a mastoid operation should be performed without delay.

The patient took the chloroform well under the careful and cautious administration at the hands of Dr. S. R. Milliken. The pulse under the anesthetic was reduced from 120 to 90 and continued strong and regular. After the operation, the pain in the neck, which had been very severe previously, now entirely disappeared, and the patient rested well with the exception of vomiting, which had now been present for several days. The conditions found on opening the mastoid were just as we had rationally anticipated. There was a decided amount of dead bone in the region of the mastoid antrum, which contained a considerable quantity of granulation tissue, which we find associated with the formation of pus and dead bone. As the acute invasion of the remaining mastoid cells had existed for only about 24 hours, there was only a limited amount of pure pus found in this situation, but this was quite distinct and was associated with an intensely inflamed state of those cells which had not yet become filled with pus. The picture emphasized in the most positive way the wisdom of operating before the purulent infection had extended to the brain. The operation was made in the usual way with the utmost caution and with the profoundest consideration for the important structures found in this region. And while the process of bone destruction had already proceeded to the walls of the lateral sinus not the slightest injury was inflicted upon any vital areas as was evident at the time of the operation and was subsequently demonstrated at the autopsy. The examination of the throat at different times showed a normal condition.

After the operation, the pulse and respiration continued strong and regular until the following day about four o'clock in the morning, when I received a 'phone message to come at once to see the patient as he was suddenly and rapidly growing weaker. I hastened immediately to his relief and found him suffering with the characteristic symptoms of profuse hemorrhage, and yet no blood was visible. He had a very rapid, feeble, thready pulse, very much accelerated respiration and cold extremities and his mind was as usual perfectly clear. I requested the family to summon the other physicians who had been in attendance upon the case, and without delay

began the recognized energetic treatment for concealed hemorrhage. At first he responded notably to the measures employed for his relief and then relapsed and became constantly weaker with a pulse no longer perceptible at the wrist. Finally the circulation through the brain became so sluggish that he became unconscious, bilateral convergent strabismus developed and this was followed by conjugate deviation of the visual axes. The pupils remained normal and vision distinct till towards the close of life when the pupils became widely dilated. There were no convulsive siezures or evidence of pain, and at no time was there any indication of meningitis. It was about two hours from the time of his sudden decline to the moment when the flickering flame of life went out. This evidently corresponded to the period after the rupture of the œsophagus with the consequent internal hemorrhage. Being totally unable to find any satisfactory connection whatever between his unexpected collapse and his ear trouble, which, since the operation, was pursuing a regular and satisfactory course, I requested a post-mortem examination, which was kindly granted by the parents. The autopsy was made within a few hours by Dr. B. Kinsell and Dr. S. R. Milliken, in the presence of Dr. A. C. Graham, Dr. J. M. Pace, Dr. D. E. Seay, Mr. J. T. Berry and myself. The brain was removed completely and most carefully examined throughout its extent and nothing abnormal was found

The wound in the mastoid region was closely investigated and everything was found clean and correct and not the slightest injury had been inflicted upon any important structure. The process of necrosis had extended inward and backward to the walls of the lateral sinus and forward well into the petrous portion of the temporal bone. Then failing to find any connection between the intracranial condition and the fatal termination the inquiry was extended to the chest and abdomen. On opening the chest cavity everything on the right side was normal, but a large quantity of dark grumous blood was found in the left pleural cavity in the mediastinal space and in the stomach, and there was an extensive rupture through the walls of the œsophagus, about three inches long, just above its entrance into the stomach. The esophagus was deeply ulcerated over a large area, the rupture being due to the destruction going on in the walls of the gullet. There was no vomiting of blood because any effort at vomiting would only empty the contents of the stomach into the left pleural cavity with which the esophagus now freely communicated.

In looking over the literature on the subject I find that all of the thirteen authentic cases, reports of which have been collected by

Mackenzie, died within a short time after the rupture, with but one exception none of them were diagnosed before death and in this case the result was not altered and a fatal termination followed. They were all associated with vomiting, but none of them had taken chloroform or had passed through an operation of any kind, showing that the condition is essentially fatal in itself and does not require additional complications to determine the final result. Mackenzie states that it is likely that the normal esophagus never ruptures, and certainly this is in harmony with reason and the experience of the world, for we have all seen cases over and over again that would surely have ruptured the gullet, if any amount of persistent and extreme vomiting could alone have induced such a result. Morever, the majority of these cases so far reported had eaten freely a short while before the perforation occurred and the rupture was favored by the sudden expulsion of large masses of food through a weakened and diseased channel. But in the case we are now considering, the patient had taken practically no food for about one week and on the contrary had been vomiting at frequent intervals during all this period, and hence no unusual strain was placed upon the organ at the morning of the rupture. In fact the microscopical examination shows an extensive disintegration of the walls sufficient to have caused a large perforation even without the intervention of any such exciting cause as persistent vomiting.

There have been many theories advanced as to the nature of the process existing in the gullet tending to favor a spontaneous rupture, and among these are diphtheria, tuberculosis, specific involvement, cancer, ante-mortem solution from contact with the digestive fluids, mediastinal abscess, and a very attenuated state of the esophageal walls dependent upon a congenital diverticulum. I have at hand sections for microscopical study of the adjacent portions of the œsophagus, but they do not clearly demonstrate the exact pathological character of the lesion. The case is almost without a parallel in medical literature and serves to impress some very important truths that are sometimes not duly regarded. First, the absolute necessity of withholding our judgment in fatal cases of marked obscurity until the final revelations of the autopsy shall have closed the chapter. Second, the absolute necessity of making not a partial but a complete post-mortem examination in every important case, not confining our inquiry to the organs apparently involved, but directing our search throughout the entire realm of possible disorders. Third, and finally, the plain and positive duty of every honorable member of our honored brotherhood to exert the full

force of his influence in directing into channels of conservatism and safety the unstable tide of public opinion in order that mankind may reap the rich harvest of good which a patient and plodding profession has planted. Our confrere, Dr. Emil Mayer, of New York, has reviewed the literature of the world bearing on this subject and has collected reports of six or seven other cases, making a total of about nineteen or twenty cases, including those collected by Mackenzie and the case I have the privilege of presenting today. I will not consume your time with further reference to the cases already reported, as Dr. Mayer will present them in full in his opening discussion.

Trust Building.

A Case of Primary Tuberculosis of the Pharyngeal Tonsil, associated with Tuberculous Cervical Glands. IVENS. *Lancet*, September 16, 1905.

Refers to the previous investigations in this subject by Woodhead, Latham, Stewart, Dmoschowski, Moore, Wendt, Megerand, Suchannek, Pilliet, Lermoyez, Dieulafoy, Brieger, Gottstein, Pluder and Fischer, Logan Turner, Lewin, Hynitsch, Lartigan and Nicoll, MacFadyean and MacCoukley.

The author limited her investigations to examination of serial sections for the lesions of tubercle, and for tubercle bacilli. Thirty-five specimens of adenoids were examined. In thirty the appearances were those of simply hypertrophy. In four there was evidence of simple hypertrophy. In one well marked evidence of tubercle was found, but no tubercle bacilli.

ST. CLAIR THOMSON.

A CASE OF SPASM OF THE OESOPHAGUS.*

BY JOHN W. FARLOW, M. D., BOSTON.

Mrs. A., 50 years of age, has been the subject of several severe attacks of spasm of the oesophagus, occurring at irregular intervals, without apparent exciting cause. Her health has always been perfect. She is not in the least nervous, hysterical, anaemic, or dyspeptic; on the contrary, good, vigorous health has always been her good fortune.

Her father, always strong and well, who lived to be 75 years of age, and his equally strong brother, who died at 80, were both subject to attacks of apparent spasm of the oesophagus, at intervals of several weeks or months, during a period of many years. The attacks of the father and uncle practically always came on at the beginning of a meal, with the swallowing of the first mouthfuls of food,—soup, for example. The patient would have a distressed look on his face, place his hand to his neck, thus indicating the seat of his trouble. At times this spasm lasted several minutes, then gradually yielded, and the patient could continue his meal, a sense of soreness in the lower part of the throat remaining. Occasionally the patient would be obliged to leave the table, and the spasm would yield with the act of vomiting.

I was unable to learn that any particular article of food could be accused of bringing on these seizures. As regards the local conditions in the throat, I found nothing but a certain amount of chronic pharyngitis. Late in life these attacks occasionally appeared, but were rather less severe. They were always considered a personal peculiarity, and, as there were no symptoms between the attacks, and, as they did not increase in frequency or severity, no treatment was used.

Mrs. A. had a few slight attacks of discomfort in the throat when eating raw apple, nuts or dry bread, in which she was obliged to stop eating for a few minutes on account of apparent closure, or a feeling of constriction, in the upper part of the oesophagus. About four years ago, in the middle of luncheon, while eating a piece of raw apple, she became pale, looked distressed, put her hand to her throat and was evidently in great suffering, the pain being

* Read before the Twenty-ninth Annual Congress of the American Laryngological Association, Washington, D. C., May 7, 8 and 9, 1907.

in the lower part of the neck, but not extending to the back or arms. She was able to speak, and the pulse and respiration were not affected; she loosened the neck of her dress and went to the opened window; she was unable to swallow anything, even water. Hot applications to the neck seemed agreeable, but did not cause the spasm to relax. After lasting about 20 minutes, the pain stopped, some frothy mucus, which had collected in the throat, was expectorated and the spasm was finished. Examination of the throat later showed a slight chronic pharyngitis and a moderate enlargement of the lingual tonsil.

There was no other attack for over a year, when in the midst of perfect health, a similar spasm occurred while eating a piece of meat at luncheon. The pain and distress were much as before and diminished in 20 minutes, but began again in a few minutes, this time the pain being referred to a region lower down, nearer the cardia. Again there was a year's interval, when one afternoon, while eating biscuit, the same train of symptoms appeared, this time lasting three-quarters of an hour.

Begining a few days later, massage of the neck was given for several weeks, cold compresses were used and local treatment for the slight trouble in the throat. Since then, about a year, there has been no trouble, but treatment may not have had much influence.

What is the nature of these attacks, and how are they to be differentiated? A young person in perfect health, while eating has a sudden distress in the neck. The first thing to be thought of is the possibility of a lodgment of food in the larynx, which would cause dyspnoea, perhaps complete loss of breath or voice, a condition which could last but a very short time. The voice would also be affected. In my patient the voice was normal and the character of the food was not such as to fill up the glottis, and there was no glottic closure. A large piece of food could be caught in the oesophagus and be held tightly by a resulting spasm, and the symptoms would be like those of my patient, except that the spasm would probably not be followed immediately by perfect ability to swallow food down into the stomach.

Angina pectoris would cause great dyspnoea, pain in the chest and radiating down the left arm, and there would be changes in the pulse and respiration. The previous history gave no evidence of a stricture or obstruction, and the absence of regurgitation of food and inability to swallow at times threw out the possibility of there being a diverticulum.

Oesophagismus, or acute spasm of the oesophagus, occurs not infrequently in nervous or hysterical subjects, but spasms of such severity and duration in a person in perfect health and without a local exciting cause is unique in my experience. The earlier and minor attacks seemed to be in the upper part of the oesophagus, while the distress in the severer seizures was apparently lower down, judging from the patient's statements and gestures.

How to relieve the spasm was a difficult matter. The patient was unwilling to allow the use of ether or anything that would cause unconsciousness. A subcutaneous injection of morphia might have relieved her, but in the two attacks which I saw she seemed hopeful that the spasm would soon relax and was very loath to have me use the opiate. As she could not swallow, and as there was much more mucous and saliva in the mouth, I did not think that cocaine or any local anaesthetic would be of service. The external, hot applications had but little effect. Another physician who was called in and arrived at the end of the spasm, which had lasted three-quarters of an hour, suggested the use of a tablet containing emetine, to be dissolved in the mouth, with the hope that enough would be quickly absorbed to cause a letting up of the contraction. He thought it would be well for her to carry some of these tablets with her, to take in case an attack came on when she was alone. I have had no experience with the drug, and a little experimenting might have to be done in order to find out what sized dose was necessary to bring about the desired effect. Perhaps a subcutaneous injection of 1/16 grain of apomorphia might suffice, but as it requires from 5 to 20 minutes to act, it might not really shorten the attack. An article by Dr. Hamilton Osgood, in the *Boston Med. and Surg. Jour.*, April 25, 1889, entitled "A Peculiar Form of Oesophagismus," discusses at some length the symptoms and nature of some of these cases, but nothing very satisfactory as regards relief of the spasm is given.

234 Clarendon St.

INTRA-NASAL DRAINAGE OF THE FRONTAL SINUS. INGALS' AND HALLE'S OPERATIONS.

BY E. FLETCHER INGALS, M.D., CHICAGO.

In May another short article appeared from Max Halle regarding our operations for Intra-Nasal Drainage of the Frontal Sinus. In calling attention to this subject once more, I wish my readers to thoroughly understand that Dr. Halle and myself have no controversy. He naturally has faith in his operation and I in mine, but in order that the reader may not be misled I wish to call attention to two or three points only, and then I will ask them to wait for a paper that I shall prepare within a few months, that I think will make the technic clear and will show that in suitable cases (which constitute at least 90% of all chronic empyemas of the frontal sinus) my operation is quite as effective as any other operation, and that it is less difficult and less dangerous than the external operation or any other internal operation yet described.

As stated in the third paragraph of Halle's article, page 378, LARYNGOSCOPE for May, I use a steel probe; but it is malleable, so that it can be given any desired curve, and I do *not use force* in passing it into the frontal sinus, nevertheless I can pass it into the sinus in fully 90% of the cases, by gentle manipulation and without the slightest danger. I readily admit that force would be dangerous in many cases. I have felt, and still believe, that the operation as originally recommended by me is as safe as any other, but the danger of perforating the tabula interna, which Halle thinks so great, has caused me to make three modifications in the technic that I believe fully eliminate all the risks that have been mentioned.

First, I pass the probe gently into the frontal sinus, and then have two Roentgen negatives made with it *in situ,* one from squarely in front, and the other laterally. This I have done several times, and I find that it shows accurately the relation of the naso-frontal duct to the tabula interna. If the duct is far enough away to cause no danger, the operation is done as originally proposed. If it is a little too close, a strong string is attached to the distal end of the spiral shield in which the cable of the burr revolves, and when the burr is set in motion the string is firmly drawn upon so as to draw the whole instrument as far forward as possible, as sug-

gested by Halle's criticism. If, however, the canal is close to the tabula interna, a shield is slid on over the burr to prevent it from cutting toward the point of danger. The opening made by my operation is 6. m. m. in diameter, and it never becomes narrower, because it is kept open by a gold tube until it is lined with mucous membrane.

That this opening is large enough in all cases when there are not great changes in the frontal sinus has been proven by the results in numerous cases. I believe it will be found large enough in 95% of all cases in which the operation is suitable; in the others, an external operation must be added to clear out the frontal sinus, and then the drainage canal made by my operation will be sufficient. It appears to me that there are serious objections to the very large opening into the frontal sinus, which appears so desirable to Halle.

Halle's operation, although appearing difficult and hazardous, certainly has some points of vantage as compared with the radical external operations, which are so much in favor by many physicians; and, from my standpoint, any safe and efficient intra-nasal operation that can adequately supplant the external operation is a boon to the patients. From present indications, I think that not more than 2% or 3% of all cases should receive the external operation, as the others can be cured quite as well by Halle's or my operation.

In conclusion, 1st, numerous operations by myself and others appear to have proven that my operation, as originally described, for draining the frontal sinus, is as safe as any other yet described.

2d. Numerous cases prove that the drainage is efficient and the gold tube absolutely prevents the canal from becoming narrower.

3d. The criticisms made have suggested to me modifications (already tried) that seem to eliminate all danger of perforating the tabula interna.

4th. I doubt the wisdom of making a very large opening into the frontal sinus, because it has been amply demonstrated that cures in nearly all cases take place with a canal only 6 m. m. in diameter.

After some further tests have been made I shall fully describe modifications of instruments and technic.

34 Washington St.

SOME IMPROVED NOSE, THROAT AND EAR INSTRUMENTS.*

BY EDWIN PYNCHON, M. D., CHICAGO.

Since our meeting at Denver two years ago I have made some further improvements in the tonsillotome I there exhibited. The change consists chiefly in the new position in which the handle is attached, as shown in the cut. This tonsillotome, as originally made, is illustrated and described in THE LARYNGOSCOPE of December, 1904, and a complete description of this later and improved form

Fig. 1. Improved Tonsillotome. ½ size.

was published in the *Annals of Otology, Rhinology* and *Laryngology* of June, 1906.

I have found this forceps to be of use when the surface of the tonsil is very friable, making it necessary that a deep hold shall be taken, while, owing to the slight space required by the scissors handles, it is of particular value in doing a tonsil operation on a child under general anaesthesia. By use of the four rings as a handle it is easily used upon either tonsil when held in either hand. While this instrument is new since our last meeting, it was exhibited at the November meeting of the Chicago Laryngological and Otological Society and shown in THE LARYNGOSCOPE of December, 1905.

* Read before the Eleventh Annual Meeting of the American Academy of Ophthalmology and Oto-Laryngology, St. Clair, Mich., August 30, 31 and September 1, 1906.

In doing an operation in a cavity, as a tonsillotomy, when general anaesthesia is employed, a bright and easily directed form of illumination is of the greatest importance. To depend upon daylight, or upon a lamp held by an assistant, even with the help of a head re-

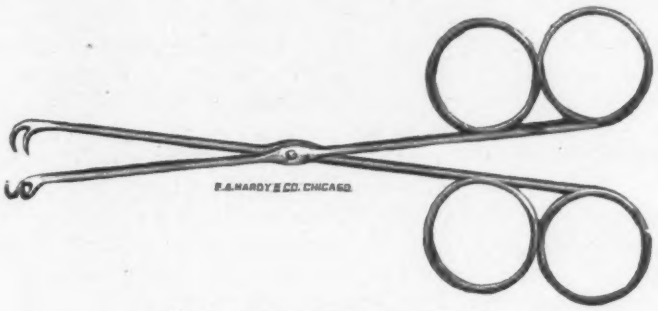


Fig. 2. Four Ring Tonsil Forceps. ⅔ size.

flector, is, in either case, trying, and the small electric headlamps requiring low voltage give a light thoroughly inadequate. A half dozen or more headlamps for use without a rheostat, and with the 110 V current, have appeared during the last few years. These lamps have all developed a disagreeable amount of heat when used for any

Fig. 3. Electric Head Lamp. 1-6 size.

length of time, and with most of them it has required holding the head in a strained position in order that the light be directed to the field of operation. In the device here shown the electric lamps is supported at the end of an adjustable bar which carries at either

end a ball and socket connection whereby the lamp is held about three inches away from the head while its rays are easily thrown upon the desired point, the operator's head and eyes meantime being in a perfectly easy and natural position. The lamp's supporting bar consists of two pieces, firmly held together by three screws, the central one of which regulates the amount of friction applied to either ball and socket joint. By thus having the lamp a distance away from the head the heat is much less noticeable, and is furthermore diminished by the use of only an eight candle lamp, so constructed as to heat to the minimum degree when in use. The head band is of spring metal with padded extremities and the connecting cord is provided with a safety disconnector so the current can be easily broken, or so the operator can go about the room. The insulation is perfect so the wearer can in no way receive a shock. In order to concentrate the rays of light, and to furthermore protect or shade the wearer's eyes, the lamp is covered with an aluminum parabolic reflector. This lamp has been perfected for me by Wm. Meyer & Co. of Chicago.

Fig. 4. New Cautery Handle. 3-5 size.

The essential feature in this new handle is that the contact is secured by the sliding of one tube in another whereby the possibility of corrosion is overcome and a perfect contact always assured. By a spring mechanism the current is automatically broken as soon as pressure is released from the contact lever. The electrode sockets are made extra long and are conical like the handle ends of the electrodes, so perfect contact and a tight fit are secured independent of the set screw, being therefore entirely free from the usual annoying wobble heretofore generally present. Furthermore, the electrode is held at an angle of about 110 degrees from the line of the handle, which affords much greater ease in use, whether the handle is held vertical or horizontal, thus being several degrees less than the angles generally employed. The sockets for the cords with the set screws are also extra heavy and solid. This new handle has been made in accordance with my suggestions by The Victor Electric Co. of Chicago. A windlass for the hot snare, while not shown in the cut, is supplied with the handle.

The Cautery electrodes I now use for tonsil work are of a new style and are thoroughly aseptible being made of two semi-circular

Fig. 5. Tonsil Cautery Electrodes. 4-5 size.

wires twisted about a strip of fiber, and are 5½ inches in length. The burning point is of irido-platinum wire of No. 24 gauge.

Figs. 6 and 7. Tonsil Depressors with Saliva Injector attached. ¼ size.

By the addition of a saliva ejector tube to these standard and previously described tongue depressors ([1] and [2]) an extra convenience

Fig. 8. Soft Palate Closer. ½ size.

is secured wherever a fountain cuspidor with saliva ejector valve or other aspirating device is available.[3]

It occasionally occurs that a patient is unable by the usual methods to close the soft palate against the pharynx when it is desired to do inflation by the latter day (no water) method of Politzer. In such case the desired contact may be secured by mechanical means, for which I employ the instrument shown.

The Freer forceps, while an efficient instrument, possesses one drawback which I have aimed to overcome. I allude to the oval bite, back of which is an open space in which tissue may enter so as to prevent the withdrawal of the closed instrument without tearing the parts. I have changed the oval to an oblong bite with straight edges and one by which all tissue engaged is fully severed. The

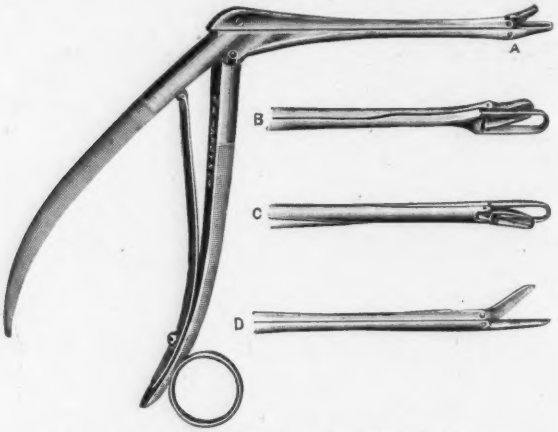


Fig. 9. Nasal Punch Forceps and Shears. ½ size.

further advantage of the latter over the former style of bite, in order to leave a smooth edge to the operated bone, is apparent. I have furthermore added a roller bearing to the contact end of the handle spring and a ring at the proximal end of the lower handle for the little finger of the grasping hand, thereby preventing any tendency to slip in the hand when fully opened. This ring is also of use to hold the forceps when, for example, freeing the wound from blood before taking another bite. In this way the necessity of laying the forceps upon the stand is avoided. Additionally, by means of a small set screw located at the upper end of the fixed handle, the maximum spread of the biting blades can be adjusted as desired.

This forceps I have had made in three sizes and, with the largest one, good sized pieces can be removed from the perpendicular plate of the ethmoid during the window resection operation the same as with the Foster-Ballenger forceps, while the two smaller sizes are used in place of the Freer forceps alluded to. The shaft of the middle size (C) is twisted 90 degrees the same as the Freer instrument, while the largest size (B) is twisted only 45 degrees, which I find to be the best angle for the purpose for which it is intended. The smallest size (A) is untwisted and serves also admirably as a syntchia biting forceps. All of these instruments are "dissembled" by removing a spring set locking pin in place of a screw as in the Freer instrument. (Not seen in cut.)

Fig. 10. Blunt Periosteum Elevator. 3-7 size.

For operations upon the turbinals, Gruenwald designed a scissors the value of which has been indorsed by extensive use, though I have found at times that it did not possess sufficient power. In order to overcome this defect I have had attached to the handle shown in Fig. 9 the Gruenwald scissors (D) thereby securing all the power ever required.

This instrument I find will at all times take the place of the Hajek blunt elevator. I have given it a slight bend on the flat whereby when turned one way it is more suitable for working in a concavity, while when reversed it becomes more suitable for working on a convexity. The bend, though, is so slight that it may be used in either

Figs. 11 and 12. Small Angular Blunt Periosteum Elevators. 3-7 size.

direction upon a plane surface. Lastly, it will separate as well on the pull as on the push, which is at times of great advantage, as the periosteum not infrequently, when there are points of adhesion, can be better separated by working from behind forward, at least up to the point of greatest adhesion, than by working rearward, as is the usual custom.

I have found these small elevators, shown in Figs. 11 and 12, are sometimes efficient when the larger elevators cannot be used to advantage, particularly upon pronounced bends well forward.

This speculum can be fully operated with one hand and quickly adjusted as required, so as to remain fixed at any desired degree of spread, or can be instantly closed by pushing up the locking ring with the thumb. It also serves, like the Beck instrument, as a means of holding the two perichondria in apposition while the nostrils are being packed with gauze after the completion of the window resection operation.

Since its introduction by Bosworth the nasal saw has become one of the most useful of instruments in the armamentarium of the

Fig. 13. Mucosa Speculum. ½ size.

rhinologist. The fact that numerous patterns have from time to time been advised by different operators proves that the varying conditions present require a corresponding variation in the saw best adapted to the particular case being operated, therefore a variety of saw blades is to be commended. In the device being described only one new style of saw blade is shown, the chief originality being in the adoption of a hollow handle which serves as a receptacle for the blades when not in use, thereby avoiding the features of misplacement or injury. While ten blades of uniform length are shown the handle holds only six, which is sufficient for general use. They are indicated in the cut by letters from a to j. The first six are suggested as the best selection for general use, though this number

may be either reduced or varied at the option of the purchaser. The blades shown are as follows:

A and B. McAuliff's probe pointed bevel-edged saws, the advantage of which is that they hug the wall from which the growth is being removed, the most elevated edge being against the wall.

C and D. Author's saw blades curved on the flat and probe pointed being of particular value in the removal of anterior thickenings of the septum, which are low down or springing from the nasal

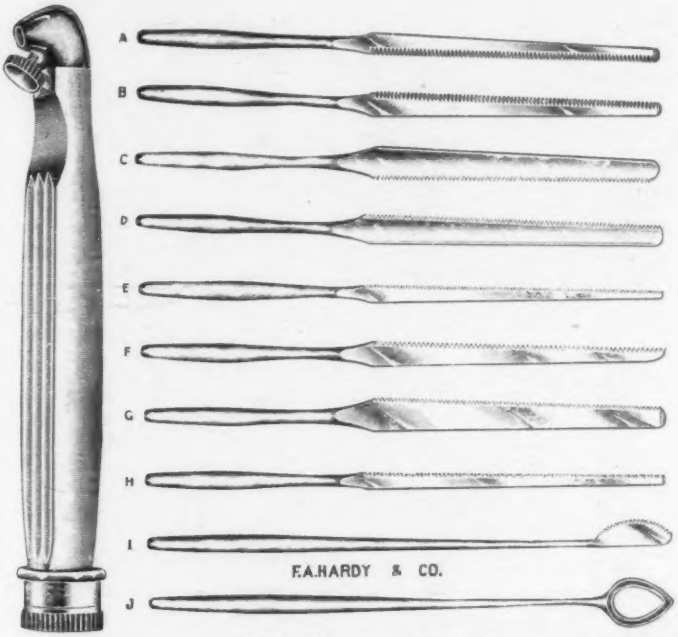


Fig. 14. Nasal Saws in Handle. ¾ size.

floor[4]. This saw is also of use, as suggested by Vail[5], for enlarging the opening into the antrum after puncture through the inferior meatus has been made.

E. DeVilbiss cross-cut saw, very small and delicate.

F. Bosworth's saw.

G. Webster's probe pointed saw for posterior growths, made extra thin at a point near the handle end, so when in use the bend upon pressure will be angular at the thin point, leaving the rest of

the blade straight, thereby facilitating easy cutting. With a blade of uniform thickness, when not too thick and rigid, there is a tendency for the whole blade to curve when operating a long ridge back of an anterior concavity in the cartilaginous portion of the septum, so the saw is soon found to bind. With the Webster blade this trouble is overcome, and I have often found it to be an extremely valuable instrument for removing ridges from the vomer.

H. Holmes' saw for the inferior turbinal.[6]

I. Author's inferior turbinal saw.

Enlargement of the bony portion of the anterior end of the inferior turbinal is an occasional cause of nasal stoppage. When the scroll reaches too far down, or near the floor, with the accompanying hypertrophy of the covering soft tissue, nasal drainage may be so impaired as to cause much trouble, and particularly tubal stoppage as observed by Holmes. By the use of his saw (H) he advises division of the lower portion of the scroll, followed, of course, by amputation of a sufficient portion of the soft tissue. In this way impairment of drainage is corrected and relief given for those untoward symptoms due to the defective drainage.

In certain cases I have found that a further difficulty is to be overcome, viz: When the enlarged scroll not only reaches too near the floor, but when also the upper portion thereof is too near the septum. In such case the Holmes operation does not fully correct the deformity, and, therefore, the logical thing to do, after the Holmes operation, would be to fracture the upper part of the scroll so as to cause the remaining and projection portion of the turbinal to drop in its natural position, but, owing to the green-wood elasticity of the bone, it will not fracture as desired. By now using my turbinal saw, entered beneath the scroll, and cutting upward and through the bone until its resilience is destroyed, the projecting turbinal can be easily pressed down as desired, and retained in its new position by the use for a day or two of a Bernays-Simpson tampon. In this way the anterior hypertrophy of the inferior turbinal is fully corrected.

J. A spoke shave is added as a valuable adjunct to the set of nasal saws.

In a comparison of the many nasal saws which I have from time to time examined or purchased, I find that the length of the blade varies from 3 to 6 inches, and that the cutting edge varies from 2⅛ to 3½ inches. I have compromised by making all of the blades in this set of saws of a uniform length of 4½ inches and the cutting

edge of each (excepting 1) 2⅝ inches long, which dimensions will meet all requirements.

A further study of the saws of the past discloses the fact that there is a great variation in the angle at which the blade is attached to the handle, generally ranging from 110 to 140 degrees. After considerable experiment I have selected an angle of 115 degrees as being, for different reasons, the best, it allowing the hand to be held in the most easy and natural position and with least bend of the wrist.

The handle end of each blade is made round and conical, so a tight fit without wobble is secured regardless of the locking screw.

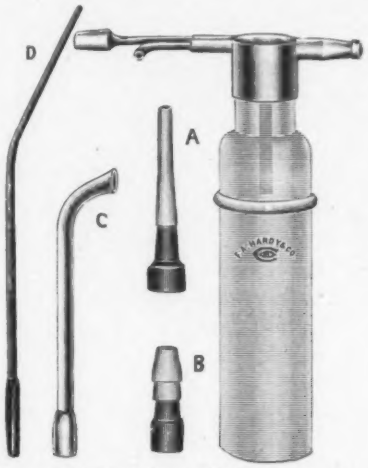


Fig. 15. Compressed Air Aspirator. ½ size.

An additional advantage of this arrangement is that the blade can be rotated to any position desired. Formerly by reversing the blade it could be made to cut either upward or downward as the handle was held in its usual vertical position. I have found it at times advantageous to revolve the blade only 90 degrees from the vertical, in which case the handle is held horizontal instead of vertical, giving thereby an easy motion. This latter position would not be of use with the usual small handles employed, while in my saw, with a large handle which can be firmly held in the hand, this horizontal position is practical and at times more convenient for easy work. The set screw is located below the blade and toward the operator, serving as a rest for his thumb.

This device is made by making certain required changes in a DeVilbiss spray apparatus, and hence is of convenient size to hold in the hand and is operated by the use of compressed air, therefore the strength of suction can be easily regulated by adjusting the controlling valves of the air tank. I have foud it of use for a variety of purposes, with the different extensions shown in cut, viz:

A. A hard rubber conical extension, more pointed and longer than "B", which can be introduced into a soft rubber tube or catheter. Its value in other departments of practice aside from otology and laryngology is apparent.

B. A short hard rubber conical tip (covered with a soft rubber cap) is used in the external auditory canal after a paracentesis or in the treatment of suppurative otitis. It can also be applied to the Eustachian catheter when in situ to remove secretions from the tube. It is a mistake to think that a tip of any kind when used with an Eustachian catheter must exactly fit the conical opening in the catheter end. Any tip when not too large, if covered with a bit of soft rubber tubing, will be found, with moderate pressure against the catheter opening, to be air tight, and its use is thus far more agreeable to the patient as well as more convenient to the operator. With this tip in the external canal, with a moderately strong suction, and with a succession of interruptions, by operating the cut-off lever, it gives the "suction with release" current which is of such value in the treatment of catarrhal deafness when the drum head is thick and retracted.

C. A metal tip with expanded end so bent as to give a lateral opening can be turned in either direction for the removal of tonsillar secretions. For this use a strong suction is required. When the same tip is turned with point up, it serves as a means of grasping the uvula during a post-rhinoscopic examination, [5] being of particular value when the uvula is either elongated or enlarged. The traction can be sufficient to act slightly as a soft palate retractor.[6]

D. A long soft-metal tip, which can be bent as desired, is of inestimable value for the removal of blood during an operation and is far superior to the cotton swab. It is of especial value when doing a so-called "window resection" operation. If the tube becomes stopped by a blood clot it can be instantly freed by closing the air escape, when the negative is converted into positive air pressure.

5. With this device is furnished a hard rubber tip, like those used with hand nebulizers, for the external nasal opening. When

inserted in one nostril, while the other nostril is tightly closed, as well as the posterior end of the nose by pressure of the soft palate against the pharynx, as in Politzerization, a moderate suction can be secured which has some effect on the sinuses in acute conditions, though, with air pressure as ordinarily obtainable, it may not serve for the application of Sondermann's method of treating atrophic rhinitis and empyaemic sinusitis[7].

F. A bell extension about one-half inch in diameter, not shown in cut, is of use as a dry cup or in the application of Bier's method of producing passive congestion. With another bell, suitably shaped for the eye, either continuous suction or suction with release could be secured.

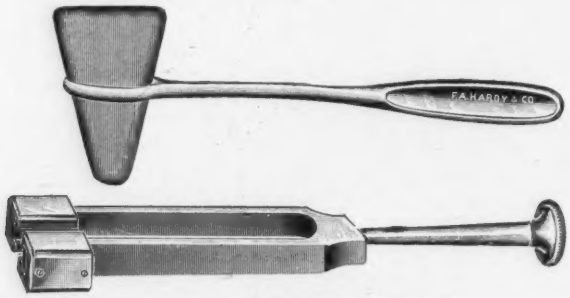
Used without any extension tip it serves as an efficient wet cup or "artificial leech," the distal end of the suction tube being concave.

Fig. 16. Yankauer-Pynchon Cut-off. ¾ size.

In order to derive the greatest value from the use of this device it is necessary that it be operated with a positive working and "instant" cut-off which gives exit to a liberal sized air stream such as I next describe. At an early date I purpose writing a more extended description of this aspirator and its uses, in which paper I will incorporate a broader consideration of the value of aspiration in medical practice.

At a meeting of the section of Laryngology and Rhinology of the New York Academy of Medicine, Nov. 22, 1905, Dr. Sidney Yankauer exhibited a cut-off of a new design. As strong claims were made as to its superiority, I ordered one from the makers, Geo. Tiemann & Co., of New York City. It saw at a glance that the device gave promise of great merit, though it possessed the un-

pardonable defect of not being "instant." Furthermore, there at once occurred to me a means whereby, through the introduction of a small vent hole, this defect could be remedied. At my suggestion, Messrs. Tiemann & Co. made for me a second cut-off in which this idea was embodied as well as a few other minor changes. After several months' use of this cut-off I was convinced of its sterling merit, though its use developed other weak points, chiefly with the spring which actuated the thumb lever. I will here say that there are no springs or washers inside this cut-off to get out of order, and that in its operation no use is made of the force of the air current as an assistance in closing the valve, as is the case with other cut-offs. The control of air escape is regulated solely by the revolving of a conical metal plug, which rests in a metal socket of similar shape and size. In fact, in simplicity this cut-off outdoes all predecessors, being all metal, and aside from the thumb lever and its spring, consists practically of but two pieces.



Figs. 17 and 18. Tuning Fork and Rubber Hammer. 2-5 size.

In place of the faulty spring I have had Messrs. F. A. Hardy & Co. apply an improved spring, which I believe will stand the test of long usage. I also had them increase the weight of the thumb lever, which is likewise the friction spring for the valve, and furthermore, I had them make the valve less conical than before, thereby insuring a tighter fit which, in connection with the strong spring, corrects a previous tendency to leak when heavy air pressure was used. In order to provide for an unexpected break in the rubber tubing, I have added an additional tube fitting, which can be attached to a reserve tube so, should a leak thus occur, the cut-off can be quickly changed from the defective to the reserve tube. I have also provided a set-screw (not shown in cut) whereby the

cut-off can be fastened in a correct direction to conform with the kink of the tube. In this way, its outlet will always point directly towards the patient or in accordance with the operator's habit of use. With this cut-off, when the lever is swung to the highest point, a constant flow of air is secured, being of value in connection with the use of large office nebulizers. I might also add that this cut-off is easily taken apart or "dissembled" by spreading and removing the spring thumb lever.

I will lastly call attention to a tuning fork which I find of great value, and one which I use with frequency for rapid ear tests. It was a Politizer fork with movable weights. These I found very unsatisfactory, often becoming unfastened and giving a rich variety of overtones. In place of the movable weights I have had applied on either prong of this fork a very heavy and securely fixed weight so adjusted as to give a C 128 V tone. Each weight is fastened by two solid set screws and is additionally soldered in place, so after several years' use there had been no change to the slightest degree in tone, which in this fork is singularly pure, being entirely free from the usual array and variety of overtones.

In order to secure a constant intensity I find that use of a rubber hammer of good size to be the best method, the maximum blow being always given, which at the start causes the weights to touch so as to give a bell sound, though at once followed by the desired pure C tone. Lastly, I have also had attached to the handle of the fork an enlarged terminus, making it better for bone conduction. All of these instruments, as described, are kept in stock by F. A. Hardy & Co., of Chicago.

REFERENCES.

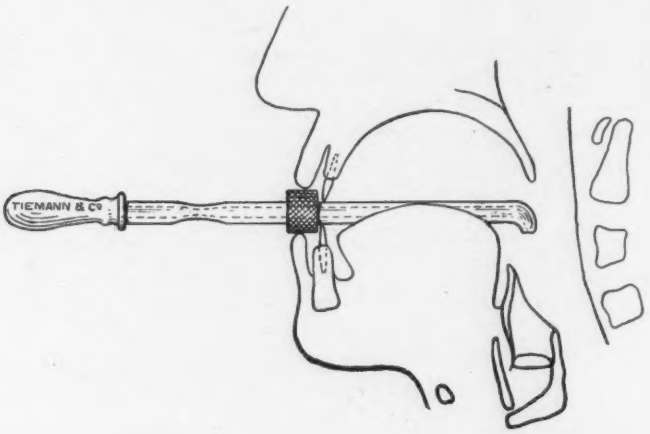
1 The Laryngoscope, February, 1897.
2 The Laryngoscope, December, 1904.
3 *Illinois Med. Journ.*, September, 1906.
4 *Ann. of Otol., Rhinol. and Laryngol.*, February, 1900.
5 Transactions of the Academy of Ophthalmology and Oto-Laryngology, 1906.
6 *N. Y. Med. Journ.*, September 29 and October 13, 1900.
7 *London Lancet*, August 12, 1905, p. 435.
8 The Laryngoscope, March, 1907.

103 State Street.

A LARYNGEAL MEDICATOR FOR THE PATIENT'S USE:*

BY SIDNEY YANKAUER, M.D., NEW YORK CITY.

At the request of Dr. George Mannheimer, an internist of Mount Sinai Dispensary, I devised this little apparatus for the especial purpose of enabling tuberculous patients to make applications of thick and viscid fluids (orthoform emulsion) to the larynx at their own homes. The device has proven so efficient that I have extended its use to the self-treatment of other laryngeal conditions with entire satisfaction.



It consists of a strong glass tube, bent at right angles at one end, slightly flattened near the other end, and fitted with a small rubber bulb holding about 5ij.

The apparatus is adjusted to each individual patient in the following manner: It is introduced into the mouth until the bent tip is just beyond the uvula, while the shank rests against the upper teeth. The position of the incisor tooth is then marked by holding the finger against it. A piece of adhesive plaster is then wrapped

* Read before the New York Academy of Medicine, Section on Laryngology and Rhinology, April 24, 1907.

about the glass tube at this point, several turns being taken, until a flange about one-eighth inch thick is built around the tube.

The patient, having drawn the necessary amount of fluid into the tube, holds it by the flattened portion with the nozzle pointing downward, and introduces it into the mouth. The teeth are lightly closed upon the instrument, and the latter advanced into the mouth until the flange rests against the front teeth. If he now takes a deep inspiration or pronounces the syllable "Ah," and at the same time compresses the bulb with the other hand, the fluid will be injected into the larynx. If the nozzle happens to be bent too far forward, so that the fluid is injected in front of the epiglottis, the head must be tilted forward; if the nozzle is bent too far backwards, so that the fluid enters the oesophagus, the head must be tilted backwards. If the rubber flnage is properly adjusted, so that the tip of the instrument does not touch the posterior pharyngeal wall, it will not cause gagging, and can be used with great comfort; but if the flange is placed too near the tip, the fluid cannot be made to enter the larynx.

Fluid of any consistency, watery, oily, or in the form of emulsion, can be injected into the larynx with equal facility. On account of its low cost, it is particularly applicable to dispensary and other poor patients.

The apparatus is manufactured by Messrs. Tiemann & Co., of New York City.

616 Madison Ave.

Trephining of the Labyrinth and Curettage of the Vestibule for Tinnitus. MATTE. *Deutsche med. Wchnschr.*, May 24, 1906.

The patient had the drumhead, malleus and incus removed at a previous operation. Matté opened the labyrinth between the round and oval windows, making an opening 3 mm. in diameter into the vestibule. The contents of the vestibule were removed by a thorough curettement. The patient recovered, the tinnitus ceased, and the hearing was not materially affected. YANKAUER.

BOOK REVIEWS.

Wellcome's Photographic Exposure Record and Diary, 1907.

BURROUGHS WELLCOME & Co., London and 45 Lafayette St., New York City. Price, 50c.

This little pocket volume deserves to be a vade mecum for amateur photographers of small or large experience. It affords easy access to much valuable information about the timing of exposures with different plates and with the varying light of different months, hours and latitudes. Space is afforded for records of exposures and a diary for the year and memoranda pages are added. The various convenient tabloid preparations of Burroughs, Wellcome & Co., for the developing, intensifying, reducing and toning are presented. There is a special edition for the United States, for Canada and for the Southern hemisphere and tropics.

Original Reproduction of Normal and Abnormal Fundi.

A new chart illustrating two normal and twenty-two diseased conditions of the retina. Each illustration is an original drawing two inches in diameter in natural colors, by MISS ALICE S. CLEVELAND, under the personal direction of W. A. FISHER, M.D., Prof. of Ophthalmology and President of the Chicago Eye, Ear, Nose and Throat College. Size 22x11¼ in. Price 1.50.

This chart is intended to accompany Dr. Fischer's schematic eye, but independent of that it affords an excellent series of reference pictures which framed would make an addition to clinic or office walls.

A New Schematic Eye.

By WILLIAM A. FISHER, M.D., Prof. of Ophthalmology and President of the Chicago Eye, Ear, Nose and Throat College, With iris diaphragm and twenty-four pictured fundi each on a separate slide. Price, $7.00.

In this schematic eye, Prof. Fisher presents a piece of apparatus which has been the outgrowth of his own needs as a teacher of the use of the opthalmoscope and which should appeal to all engaged in similar work, as well as to students or doctors who may desire to acquire some facility in the use of the opthalmoscope and to familiarize themselves with the conditions which may be revealed by this instrument, before undertaking the examination of a living subject.

The advantages of this particular schematic eye are the iris diaphragm by which a pupil of any desired size from 30 mm. to pin point may be obtained, and the number of fundi provided. Each of the twenty-four pictures represents a different condition of the retina.

ERRATA.

Page 577, 12th line from bottom, should read: No one is fully abreast with the subject, who has not read, etc.

Page 579, 3rd line from top, read *thus* instead of *this*.